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THESIS

**ECONOMIC GROWTH IN THE PEOPLE'S REPUBLIC OF
CHINA**

by

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December 1998

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PRC leaders demonstrated sound macroeconomic policies, despite the Asian economic crisis and the resulting decrease in market demand. PRC growth stems from increases in productivity and has taken advantage of underemployed workers as well as the opening of trade. The PRC faces substantial problems both from within and outside its borders. The country has a history of such problems and disruptions, yet it still realizes economic growth. The conclusion of this thesis is that the economic growth that the PRC has demonstrated is sustainable

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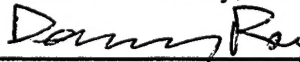


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LIST OF ACRONYMS

ARDL	Autoregressive-Distributed Lag
CCP	Chinese Communist Party
ECM	Error Correction Model
EU	European Union
FDI	Foreign Direct Investment
GDI	Gross Domestic Investment
GDP	Gross Domestic Product
GNP	Gross National Product
ICBM	Inter-Continental Ballistic Missile
IMF	International Monetary Fund
MFN	Most Favored Nation
OECD	Organization for Economic Cooperation and Development
PLA	People's Liberation Army
PPP	Purchasing Power Parity
PRC	People's Republic of China
SEZ	Special Economic Zones
SOE	State Owned Enterprises
TFP	Total Factor Productivity
TVE	Township Village Enterprise
US	United States
USSR	Union of Soviet Socialist Republics
WTO	World Trade Organization

EXECUTIVE SUMMARY

The purpose of this thesis is to study the Chinese economy and analyze the economic growth that the country has experienced since Deng Xiaoping instituted reforms in 1978. The goal is to provide an answer to the question: Is the economic growth of the current PRC system sustainable? Critical factors that contributed to that economic growth, along with recent trends and developments, hold valuable information concerning the potential for continued growth. Included is a survey of existing literature concentrating on the factors that have potential for continued contributions to economic growth. The goal of the review is to make some sense of the great quantities of literature that have proliferated of late. To this base, economic forecasting was added to provide insight concerning specifics for future scenarios. Forecasts from prominent China watchers were studied and an autoregressive-distributed lag model was run to determine the long term relationship between investment and growth of GNP.

Sino-US relations are in the high end of a cyclical pattern. Economic policy is used as a tool for developing foreign policy in areas such as weapons proliferation and human rights. President Clinton's administration is using economic interaction to pursue a policy of engagement that is designed to work with PRC leaders, fostering a move away from Communism, toward a free market economy and democracy.

The PRC economic reform period consisted of three phases of reforms; each instituted as the PRC economy began to overheat and inflation increase. Each new phase of reforms accomplished its goal of reducing inflation and sustaining high growth. An area in which reforms were attempted but were not successful was the SOEs. SOEs remain a major source of waste and inefficiencies to this day. They do, however, provide

employment for millions of workers, and this makes reforms that eliminate or restructure SOEs controversial and difficult to institute because of the resulting rises in the number of unemployed. The reforms that were instituted established a healthy non-state sector and profitable TVEs that occupy a niche in the middle ground between the State and non-state sectors. Deng's reforms have been criticized by some as haphazard and characterized by the Chinese term *moshitouguohe* "crossing the river by groping for stones along the way." One must not be too critical of Deng's reforms, the PRC has realized growth levels of nine percent per year since 1978.

The Rand Company sponsored a study of economic and military trends in 1989 that forecasted future economic growth for several countries including the PRC. The 1989 study predicted 4.7 percent growth for the period 1990-2000. In 1995, Rand again sponsored an economic and military trend study by several of the same authors using the same method. This time the forecast developed two scenarios, one with stable growth predicting 4.9 percent growth (1994-2015), and a second disrupted growth scenario that forecast 3 percent growth over the same period. The authors conceded that their estimates were probably low.

An autoregressive-distributed lag method with an error correction model was used to forecast GNP growth using its long run correlation with investment. Three scenarios were constructed using high, medium and low growth patterns. The high and low scenarios fit within the boundaries of established investment as a percentage of GNP in PRC history.

The future of PRC growth depends on a combination of internal and external factors and developments. Internal factors include human capital, SOEs, industrial and manufacturing, agriculture, infrastructure development, financial and service sector development, and political stability. External developments include PRC integration into the world economy and the Asian economic crisis. In order for the PRC to experience the high growth scenario, these items and developments must remain stable and positive. If major difficulties occur with any of the listed issues the PRC will experience low growth. The likely scenario is somewhere in the middle.

This assessment of the PRC economy shows a system that has progressed through several stages and has demonstrated sound macroeconomic policies. This has continued despite the Asian economic crisis and the resulting decrease in market demand. Their growth is from increases in productivity and has taken advantage of underemployed workers and opening of trade. The PRC faces substantial problems both from within its borders and outside. The country has a history of significant problems and disruptions yet it still realizes economic growth. The conclusion of this thesis is that the economic growth that the PRC has demonstrated is sustainable.

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I. INTRODUCTION

A. BACKGROUND

In 1978, the People's Republic of China (PRC) President Deng Xiaoping established special economic zones along China's coastal region in an effort to develop a market economy while maintaining China's Communist system. Underutilized farm workers were transferred to industrial jobs in urban areas, increasing productivity. China developed from an agrarian economy into an industrial powerhouse. This growth is one of the greatest economic phenomena of the twentieth century, rivaling the United States' emergence in the early part of the century and the post World War II recoveries of Japan and Germany.¹

China's economic growth stems from reforms that include a combination of large capital investments, both from international and domestic sources; an increasingly productive labor force; and market oriented changes that increase profit incentives. These factors combine to give China positive long-term prospects. In the two decades since Deng's reforms began the Chinese economy has grown at a rate of roughly 9 per cent per year.² PRC officials are pinning China's future on the belief that this type of growth is sustainable.

¹ Greg Mastel, *The Rise of the Chinese Economy, The Middle Kingdom Emerges*, (New York: M. E. Sharpe, inc., 1977), 9.

² Organization for Economic Cooperation and Development (OECD), *China in the 21st Century Long-term Global Implications*, 1996, 3.

The PRC appears to have built a foundation for growth rates to remain high for at least two more decades.³ The stability of this foundation is dependent on how the PRC economy deals with factors that work to disrupt economic momentum; these factors include forces from external and internal environments. Externally, these include issues such as the ongoing Asian financial crisis and political pressures exerted from other economic powers. Internally, factors that affect continued economic growth fall into four groups: infrastructural, technological, organizational, and institutional.⁴ Because of China's importance, a forecast evaluating possible scenarios of future economic growth is necessary in order to design United States (US) policy responses

B. RELEVANCY

The current presidential administration believes that the US can use economic ties with China as an avenue to shape the PRC's political system. Economic engagement may be the initial bridge that will enable US policy makers to address such issues as the spread of weapons of mass destruction, international crime, environmental protection, human rights and regional stability in east and south Asia. Future economic growth in the PRC is an important matter for US national security no matter what scenario transpires. If China's economy continues to grow at a pace near that of the past two decades, it will become an economic giant, rivaling Japan for the position of Asian trade dominance. A policy of engagement will ensure that China and the US maintain relations and therefore, the potential remains for the US shaping of future ties. If PRC economic

³ Zuli Hu, "Why is China Growing So Fast?" *International Monetary Fund Working Paper 96/75*, (IMF, 1997).

⁴ OECD, *China in the 21st Century Long-term Global Implications*, 8.

growth is not sustained and the economy falls victim to unemployment problems or the on-going Asian economic crisis, US policy will be an important part of minimizing the damage done to both the US and world economies.

C. RESEARCH QUESTION

This thesis will address the following question:

Is the economic growth of the current PRC system sustainable?

D. METHODOLOGY

A growing body of economic analysis is focusing on many aspects of China's unique market socialism economic system including privatization and economic growth. This thesis will integrate recent economic developments, world economic trends, and patterns of market reforms for the purpose of forecasting the prospects of continued economic growth. Additionally, this thesis will evaluate the unique and changing relationship between privatization and state ownership in the PRC. This forecast will be applied to analyze implications for US foreign policy towards the PRC.

E. OUTLINE

Chapter II examines China's economic, cultural and political history up to 1978, when Deng Xiaoping instituted the reforms that he believed would enable the PRC to become a great power. This chapter explores the foundation of the dual track economic system that was to follow the reforms. Chapter II concludes with an assessment of the PRC economy just before the institution of Deng's reforms.

Chapter III outlines the reforms that Deng initiated which contributed to the exceptional economic growth in the PRC. The sequence of the reforms played an

important role in the development of the economy, as each phase was designed to build upon the successes of the previous phase or to correct problems encountered in earlier reforms. In addition, Chapter III identifies reforms aimed at the State Owned Enterprises (SOEs).

Chapter IV examines the sources of growth in the PRC economy from 1978 to the present in order to determine which reforms will continue to produce economic growth in the future. This list will be the foundation upon which the subsequent forecasting exercise will draw to predict China's future course.

Chapter V compares three analyses that forecast the PRC economic future. Points of focus are methodology and Gross National Product (GNP) growth. This will be followed by an exercise in which autoregressive-distributed lag (ARDL) and error correction modeling (ECM) will enable the identification of the relationship between GNP and gross domestic investment (GDI).

Chapter VI is comprised of three sections, the first of which examines and lists critical domestic elements that should determine the future direction of the PRC economy. The second section of Chapter VI studies elements external to the PRC system. The third and final section of Chapter VI applies these elements to forecast the potential future of the PRC economy using the GNP/GDI relationship derived in the ARDL model developed in Chapter V.

Chapter VII studies Sino-US relations and outlines the relationship between economic and foreign policy. This chapter also proposes future questions applicable to the field of this study. Chapter VIII concludes this thesis.

II. PRE REFORM HISTORY

A. THE MIDDLE KINGDOM AND THE DYNASTIC CYCLE

To understand the current PRC economy some historical information concerning China's Confucian beliefs, cultural legacy and history are necessary. This will help illuminate some of the inherent differences between western economic systems and that of the PRC. China has a lengthy history of prosperity that has only been overshadowed in the last century and a half by a diminished standard of living, which is now one of the lowest in the world.

A few centuries ago, the Chinese considered themselves a vastly superior society that was literally the center of the world. All other societies were simply considered barbarians on the periphery of China's sphere of influence. The Chinese believed that they could gain little by observing and interacting with the barbarians. The Chinese belief in their central position geographically, and the historical notion that they were the center of the world, is illustrated by their term for themselves: "The Middle Kingdom." The ways of the Middle Kingdom developed over thousands of years, marked by distinctly eastern religious beliefs, well-defined dynastic cycles, and periodic episodes of revolutionary violence and disorder.⁵ The legacy of this cultural arrogance is that the Chinese missed the opportunities of modern scientific and economic technology for many years. This greatly increased the distance that the fledgling Chinese market economy had to progress upon its institution in order to catch up with its neighbors.

⁵ John K. Fairbanks, Edwin Reischauer, and Albert Craig, *East Asia, Tradition & Transformation* (Boston: Houghton Mifflin Company, 1989), 20.

Chinese history is marked by dynastic cycles characterized by periods of a rise to high prosperity and wealth followed by corruption, over-taxation, rebellion and decline. In time, the maintenance of the system becomes costly, both economically and politically; the failure to sustain the accustomed standard of living leads to the decline. The downward spiral eventually results in collapse.⁶ Confucianism is an ethical institution in Eastern cultures, which serves as the equivalent of the Western culture's church, state, and private enterprise values. Confucianism provides social norms that keep the sense of the greater society and family superior to those of the individual.⁷ Dynasties that are considered successful overcome the previous dynasty, follow Confucian virtues, and strengthen society. However, eventually even the successful dynasties succumb to corruption, over-taxation, famine, and rebellion and end in collapse as described above.

The idea of the dynastic cycle is significant because it fosters the belief that the last century, considered "The Century of Shame," could mark the bottom of a dynastic cycle and signify that the Middle Kingdom is on the rise to a period of great wealth. In this scenario, the growing PRC economy is the engine that is destined to propel China to its inevitable peak. The validity of this issue rests in determining exactly where the PRC currently is in the cycle.

⁶ J. Barker Rosser and Marina Rosser, *Comparative Economics in a Transforming World Economy*, (Chicago: McGraw-Hill Co., 1996) 360.

⁷ Fairbanks, Reischauer, and Craig, *East Asia, Tradition & Transformation*, 16.

B. THE CENTURY OF SHAME

China suffered a hundred year decline of domestic and international esteem during what is termed "The Century of Shame." This period started with the signing of the first of the unequal treaties (the treaty of Nanking in 1842), and lasted through the end of the Chinese Civil War in 1949. In this century China was defeated, subjugated and repressed by country after country, first Britain then other Western powers, and finally Japan.

China exited the Century of Shame in a position at the utter bottom of the dynastic cycle. A strong vacuum existed in Chinese culture and political leadership, which was readily filled by the Communist Marxist-Leninist ideology of Premier Mao Zedong. Mao rose to power riding on popular support left over from his people's war against the Nationalists, who were forced off the continent and onto the island of Taiwan. Mao and his followers used their tribulations from the Chinese civil war symbolically to represent their ability to overcome injustice.

Chinese ideology gained valuable lessons from these periods that continue to prevail in the country today. Some of these are⁸:

- Foreign powers, including Japan and western nations, desire to weaken and exploit China.
- The Chinese must never again allow themselves to be overtaken.
- China is in the position of uncompensated victim, and to this day, Chinese receive insufficient respect.

⁸ Ideas for this concept originated in NS 3661, Summer Quarter, Naval Postgraduate School, Professor Denny Roy.

These lessons placed China in the position for a dynamic leader to capitalize on Chinese notions of superiority and implement a system to lead the nation back toward prosperity, Mao Zedong embodied that person.

China's current economic system is an odd marriage of Mao's socialism and a market economy. Whether this is termed a dual track system or a "market economy with Chinese characteristics," there remains considerable influence from the Mao Zedong period.

C. MAO ZEDONG AND COMMUNIST IDEOLOGY

In the early 1940s, Mao utilized Confucian notions concerning land distribution to develop his ideology of full collectivization. This was similar to the system in the Soviet Union at that time. Common collectivization served to strengthen the PRC's alliance with the USSR in the early Cold War years. The PRC alliance with the USSR was short lived, however, as Mao's first disagreement with Soviet ideology came in 1950 with the beginning of the Korean War. He resented Stalin's reluctance to openly commit troops to aid the PRC in the struggle to overcome the western threat to communism from the US. This initiated tensions that would develop into the first Sino-Soviet split in 1957. As Mao's ideas concerning socialism and communism evolved, Chinese policy followed. He was strong in his belief of Leninist ideology, as exemplified in his support of Stalin against Tito's "revisionism" in 1948, and again in his objection to Khrushchev's denouncement of Lenin in 1956.

Mao's ideas did differ from those of Stalin in at least five ways⁹:

- 1) China emphasized the development of a rural economic base and a significant countryside populous.
- 2) Mao stressed egalitarianism and Confucian based moral incentives as opposed to the Soviet emphasis of material incentives.
- 3) The Chinese system stressed anti-bureaucratic attitudes.
- 4) China's open opposition to established culture and traditional Confucian values is exemplified by Mao's campaign against the "four olds" (old customs, old habits, old culture and old thinking).
- 5) Mao stressed regional decentralization of authoritative control of the economy.

1. The PRC Economy Under Mao Zedong

In the first years of Mao's leadership, China's economy prospered by riding the coat tails of the expanding Soviet system. Mao followed the Soviets advice concerning command central planning with heavy industrial buildup concentrated in the resource rich region of northeastern Manchuria, a place of traditional Soviet interest. Taking advantage of an industrial base that was originally developed during World War II by the Japanese, China realized significant growth at the expense of the agrarian economy.

Steel production grew at an annual rate of 31.8 percent, pig iron at 27.7 percent, and cement at 29.3 percent, whereas grain output expanded at only 4.0 percent. Per capita kilocalorie availability rose from 2,048 in 1953 to 2,217 in 1957 as rural per capita pork consumption fell from 5.5 kilograms to 4.4 over the same period.¹⁰

The implementation period of socialism and the Stalinist model is termed the first five-year plan; further changes would be designated by the increments of time that would follow.

The first Sino-Soviet split developed as Mao denounced the Soviet move away from traditional Leninist ideology. Soviet Premier Khrushchev's reaction was to cut off

⁹ Rosser and Rosser, *Comparative Economics in a Transforming World Economy*, 363.

¹⁰ Ibid., 364.

economic and technical aid to China. The drastic reduction of money and technology from the Soviet Union, and a poor agricultural harvest, combined to lead Mao to institute "The Great Leap Forward" in 1958. His goal was to bolster rural-based industrialization using the existing level of technology, allowing the decentralized communes to produce their own mechanization for agricultural harvests.

The communes had replaced the traditional Chinese market towns as the center for income accounting and distribution. This system would replace the entire family unit, and even went as far as to develop living dormitories. The move away from the traditional family unit ran contrary to traditional Confucian values, and it met with such resistance that the dormitories were abolished and the accounting unit was transferred up to the village level. Because of the many changes in control, inefficiencies developed causing severe problems. As Rosser and Rosser write:

Rural industry developed in backyard production facilities, and pig iron and other basic industrial goods output increased in 1958-1959, although the quality was generally very poor. Industrial output growth accelerated in 1960 and fell sharply in 1961 as disorganization and catastrophe overwhelmed the economy.¹¹

Famine ensued and death rates in China were twice that in 1960 as in 1958. Lack of agriculture led to as many as 30 million deaths. Consumption fell from 4.6 kilograms per capita in 1958 to 1.2 in 1960. Due to distribution bottlenecks and inconsistencies in infrastructure, the famine was unevenly distributed throughout the countryside.

A coalition that included Party General Secretary Deng Xiaoping pressured Mao to accept blame for the state of the Chinese economy in 1962, which Mao did in a "self-

¹¹ Ibid., 365.

criticism.” More traditional central planning was reinstated. The emphasis on development was shifted to the agriculture sector instead of industry, with light industry being placed ahead of heavy. These moves combined with good growing seasons, and both agriculture and industry grew significantly. “Between 1961 and 1965 overall agricultural output rose at an annual rate of 9.4 percent and industrial production rose at an annual rate of 7.8 percent. Famine disappeared.”¹² The PRC system had survived a difficult period marked with many changes, but nothing was gained in the quest to raise the standard of living for the Chinese.

During a debate in 1962 Deng endorsed a move away from central planning toward increased private family units and used the famous maxim: “It does not matter whether the cat is black or white as long as it catches mice.” Later, during the Cultural Revolution this was used to denounce him as a “capitalist roader.” This was, however, an indication that Deng had strong ideas that would foster the great growth of the reform period. The seed was planted that market-type reforms could be implemented in the PRC.

In another of China’s periodic episodes of turmoil, Mao instituted “The Great Proletarian Cultural Revolution” in 1966. This was his response to rising dissatisfaction with the stagnant economic conditions that accompanied the Soviet style bureaucratic government of the PRC.¹³ Mao reacted to his outspoken critics by attempting their removal. This controlled program of removal turned into a revolution as Mao found widespread dissent within the party. In an attempt to promote “pure Communism” he

¹² Ibid., 365.

¹³ Fairbanks, Reischauer, and Craig, *East Asia, Tradition & Transformation*, 959.

sent his Red Guards to attack the party elite (such as Deng) and intellectuals, to institute "reeducation." This produced anarchy throughout the countryside, ultimately leading to the People's Liberation Army's restoration of order and the mysterious death of the number two man in the party, Lin Biao. Deng, other members of party hierarchy, bureaucrats and intellectuals were attacked by Mao controlled factions of the military and incarcerated for reeducation.¹⁴

The crisis peaked in 1967 as chaos reigned throughout the countryside and Mao was forced to use the military to restore order. This decade again retarded Chinese development and eliminated nearly an entire generation of intellectuals and scholars. Mao's implementations remained in place until his death in 1976 when Deng re-established power and implemented his four modernizations: agriculture, industry, science and technology, and national defense.

Mao's policy of national and regional self reliance caused a sharp decline in foreign trade from 4.245 billion US dollars in 1966 to 3.785 billion US dollars in 1968,¹⁵ but domestic agricultural output and industrial production rose annually by 4.4 and 12.7 percent respectively from 1968 to 1978.¹⁶ Domestic strife continued for several years after Mao's death in 1976. The move to self-reliance forced decentralization to local governmental units for planning and administration. A "Third Front" was developed to promote industrial expansion well within Chinese borders, countering fears of a Soviet

¹⁴ Rosser and Rosser, *Comparative Economics in a Transforming World Economy*, 366.

¹⁵ Carl Riskin, *China's Political Economy: The Quest for Development Since 1949*, (Oxford: Oxford University Press, 1987), 208, Quoted in Rosser and Rosser, 366.

¹⁶ Alvin Rabushka, *The New China: Comparative Economic Development in Mainland China, Taiwan, and Hong Kong*, (Bolder, Westview Press, 1987), 208. Quoted in Rosser and Rosser, 366.

invasion or a US attack of the industrially significant coastal regions. This internal development of infrastructure would be significant to later growth in the PRC. During this time, the PRC system showed resilience repeatedly as it weathered major economic and political disruptions that could have caused total collapse.

The World Bank produced a 1992 report that outlined China's economy before Deng Xiaoping's 1978 reforms. The report noted that the PRC system at this time was atypical of the standard Soviet model and other reforming socialist systems. The most important differences were in the areas of health and education. This gave the PRC an advantage that would make the difference between PRC growth and the Soviet block's problems in the decades to follow. Furthermore, the World Bank noted that China was not in a position of macroeconomic financial crisis in 1977 "which removed the need for a strong dose of deflationary policy to accompany the launching of reforms."¹⁷

D. BUREAUCRACY

One element that proved to be a burden on the PRC economy during the reform period was the Communist style bureaucratic legacy. A position in the Chinese governing structure was traditionally seen as a path for wealth and high status in Confucian societies, and post civil war China was no different. Unfortunately, authoritarianism and corruption were the status quo as the salaries were not sufficient to cover the trappings of the assigned offices.¹⁸ Another characteristic of the Mao era

¹⁷"China Reform and the Role of the Plan in the 1990s," *World Bank Country Study* (World Bank, 1992), 34.

¹⁸ NS3661 course at the Naval Postgraduate School in Monterey, CA, 9 July 1998, Professor Denny Roy.

bureaucracy was a hesitancy to make controversial decisions, as any discontent from the governing body was often accompanied by with harsh retribution. As Minxin Pei writes:

The Chinese political system Deng Xiaoping inherited in 1978 resembled a Hobbesian world. No norms governed elite politics. Its key governmental institutions, especially the legal system and the bureaucracy, had been seriously damaged by the economic and political turmoil of the Great Leap Forward of 1958 and the 1966-76 Cultural Revolution. There were no institutions of political campaigns and mob violence had been the main form of participation. Deng was faced with rebuilding China's wrecked political system and reforming its backward economy at the same time.¹⁹

Party performance was hampered by low turnover rates, and therefore, aged ministers and vice-ministers who had low levels of education. In the period before the reforms, the average age of provincial leaders was 62 and only 20 percent were college educated.²⁰

Another institution that would offer stiff resistance to economic reforms was the Peoples Liberation Army (PLA) that Mao had used to institute the Cultural Revolution. From the time when Defense Minister P'eng Te-huai was replaced with General Lin Biao in 1959 for criticizing Mao's Great Leap Forward the PLA became an important tool of the Communist Party. The PLA would develop into its own bureaucracy and be a stakeholder in the status quo.

E. PRC ECONOMIC POTENTIAL IN 1978

China's stable condition going into the reform period of 1978 eliminated the need to focus on a deflationary policy, the PRC could capitalize on already high levels of savings. Prior to the reforms the PRC had experienced good levels of growth, as in the period between 1952 and 1978. Growth in the PRC at this time averaged between 6 and

¹⁹ Minxin Pei, "Is China Democratizing?", *Foreign Affairs*, Jan/Feb 1998, 69.

²⁰ Ibid., 71.

9.7 percent.²¹ China also was enjoying a high level of human capital endowment. This is significant in that human capital fosters an increase in output, and therefore, furthers economic growth. However, as will be discussed later, this endowment is susceptible to diminishing returns. Fortunately the PRC had large numbers of agrarian workers who were underutilized on the rural farms; this is extra productivity just waiting to produce. Low wage levels increased the potential of China's workforce even more. At this time, workers tended to be relatively young and because of efforts to stem the population, laborers had relatively few dependent minors for which to be responsible. Another statistic that separated the PRC from other emerging market countries, and represented potential for growth, was the relatively high life expectancy of 65.

However, a few problems were barriers to the future of the Chinese economy in 1977. These included slowing growth rates of living standards and agricultural production levels. Also significant were the inherent inefficiencies of the Chinese Communist Party (CCP) system at the time. These inefficiencies caused a deterioration of industrial planning and general waste of factor inputs.

A major flaw in the pre-reform PRC economic system was the lack of exposure to foreign trade. China was in a position to take advantage of the other so called East Asian Tigers that included Japan and South Korea, each experiencing great booms of economic growth and technical advancement. Its location potentially enabled China to receive a technology transfer that could bolster production efficiency. Although Hong Kong was under British control at the time, it also represented a credible source for capital

²¹ Susumu Yabuki, *China's New Political Economy, The Giant Awakes*, (Boulder: Westview Press, 1995), 20.

investment and a high capacity port through which the PRC could conduct trade to the rest of the world.

Deng did not institute his 1978 reforms simply to create economic growth. China had everything required to sustain moderate, long-term growth even without Deng's reforms. China had experienced decades of reasonable growth; Deng was concerned with the lack of improvement in productivity. The PRC system required ever increasing levels of investment to maintain constant levels of output, preventing gains in personal consumption. An Oxford Review on Economic Policy summarizes Deng's motivations:

Dissatisfaction with the "extensive" growth model that had generated overall growth, but little if any improvement in productivity, and required increasing levels of investment to be maintained, thus preventing significant gains in personal consumption; and... a political rejection of the extremes of "leftism" associated in particular with the period of the "Cultural Revolution."²²

Keeping with the beliefs that he had articulated before the Cultural Revolution, Deng sought a more successful system for the PRC.

²² *World Bank Country Study*, 34.

III. DENG XIAOPING'S REFORMS

This review of the post 1978 reforms will concentrate on measures that were instituted which were actually effective at increasing economic growth in the PRC. Reform of the SOEs is included because of the significance of that sector and the emphasis on SOE reforms in each phase. Economic reform under Deng came in three phases. Significant events are outlined below.

A. PHASE I: AGRICULTURAL AND RURAL REFORMS (1978-83)

The first phase of the reforms was designed to counter existing institutional factors, which inhibited productivity. The system reinstated the practice of linking rewards with effort, which had existed in China prior to 1958.

Significant reforms:

- Land leased to farmers under the household responsibility system
- Higher procurement prices for key crops
- Introduction of the two-track price system
- Open economic zones established in coastal regions to:
 - Attract foreign investment
 - Promote exports
 - Serve as laboratories for future market oriented reforms
- Scale back the planning system for state owned enterprises (SOEs)
 - Link bonuses more closely to performance
 - Establish tighter links between wages and productivity

The agricultural sector appears to be the jumping off point for PRC reforms. This area was underdeveloped in 1978 and offered a prime opportunity for quick results. Increases in agricultural efficiency would also generate required savings rates and

provide a source of surplus labor from displaced farm workers. Initial agricultural reforms were successful, increasing both total output and productivity. Between 1978 and 1984 the increase in grain output was greater than in the proceeding two decades. This came at a time when total agricultural investment was at its lowest since 1949.²³ This growth was almost completely due to increases in labor productivity, as there were no technological transformations.

Not all of the reforms were new, several programs were similar to others which had been imposed previously in the post World War II period and then dropped because of perceived failure. In addition, Deng initiated an Open Door policy that was unique in Chinese history. The policy established Special Economic Zones (SEZs) to stimulate trade with foreign markets. In these zones ownership, tax, investment, material, and wage policies were instituted that would make the areas receptive to Foreign Direct Investments (FDI). There was also a reallocation of resources, which emphasized the profitable consumer-goods industries instead of the input-intensive heavy industry. This produced an increase in manufacturing productivity and bolstered the consumer goods available. The growth experienced in Phase I was consumption led, as the consumer goods sector showed quick returns based on the short time from production to consumption.²⁴ The success of this phase, especially in rural reforms, led to the implementation of the next phase.

²³ "China," *Oxford Review of Economic Policy*, Vol. 11 No. 4 (Winter 1995), 6.

²⁴ *Ibid.*, 8.

B. PHASE II: BROADENING OF REFORMS (1984-91)

The second phase was marked by a shift to reforms in the urban sector and industry, which took advantage of the increased savings and surplus labor that resulted from the rural reforms.

Significant Reforms:

- Experiment to grant SOEs more autonomy in production/employment decisions
- Extensions of two track system to industrial prices
- Other types of enterprises (such as urban collectives) gain importance
- Bank reform that included establishment of the People's Bank as the central bank
- Fiscal reforms implemented so that:
 - Enterprises could retain larger share of profits
 - Enterprise tax introduced to replace profit transfers
- Trade and exchange system reforms that included
 - Number of SEZs expanded
 - Foreign trade plan scaled back
 - Swap centers for the trading of retained exchange
 - Further increases in decentralization

Increased decentralization was recognized in the form of township and village enterprises (TVEs). Part of the non-state sector of the dual track system, TVEs are given tax advantages and local government support as a shelter from the centralized persuasion of the Communist Party. In the second phase of the reforms, TVEs increased significantly in number and therefore industrial output. As the Oxford Review of Economic Policy notes:

In 1978 the number of TVEs stood at 1.5m and employed 28.3m workers. In 1983, the number of TVEs had actually fallen to 1.4m. However, the next year, in 1984, their number shot up dramatically to 6.1m. By 1993, there were 24.5m TVEs employing 123.5m workers (State Statistical Bureau, 1994).²⁵

²⁵ Ibid., 9.

Three significant issues are derivatives of TVE growth. First, the tax that accrued from TVEs went primarily to local governments, which then were able to reinvest the funds outside traditional centralized channels, establishing new consumer preferences in an emerging market. This would become significant, as government income would fall and SOEs share of output dropped. Second, consumer confidence and investment grew, providing for further investment into rural TVEs generating a growing spiral of productivity. Third, the state, at the local level was able to play a critical role in fostering the development of TVEs, providing legitimacy to the state's role in the development of a market economy.

Phase II reforms marked a drastic increase in numerical growth in the non-state sector and with it came increased economic growth. This growth brought about a decrease in macroeconomic controls and, in turn, increased inflationary pressures usually associated with an overheating economy. This brought on the need for reforms designed to improve the financial infrastructure. In addition, a "rectification" period saw the slowing of reforms designed to lessen inflationary pressures. Deng recognized the need for accelerated reforms and the Third Plenum of the Fourteenth Central Committee in 1993 articulated the goal of creating a "Socialist Market Economy" with the third phase.

C. PHASE III: DEEPENING OF REFORMS (1992 TO PRESENT)

The third phase was marked with reforms in foreign trade, taxation and investment. This represented a significant shift away from a planned system in favor of a market type economy. The major area of focus however, was in policy concerning SOEs. The system of contracting for SOEs was modernized to increase efficiency. Like policies

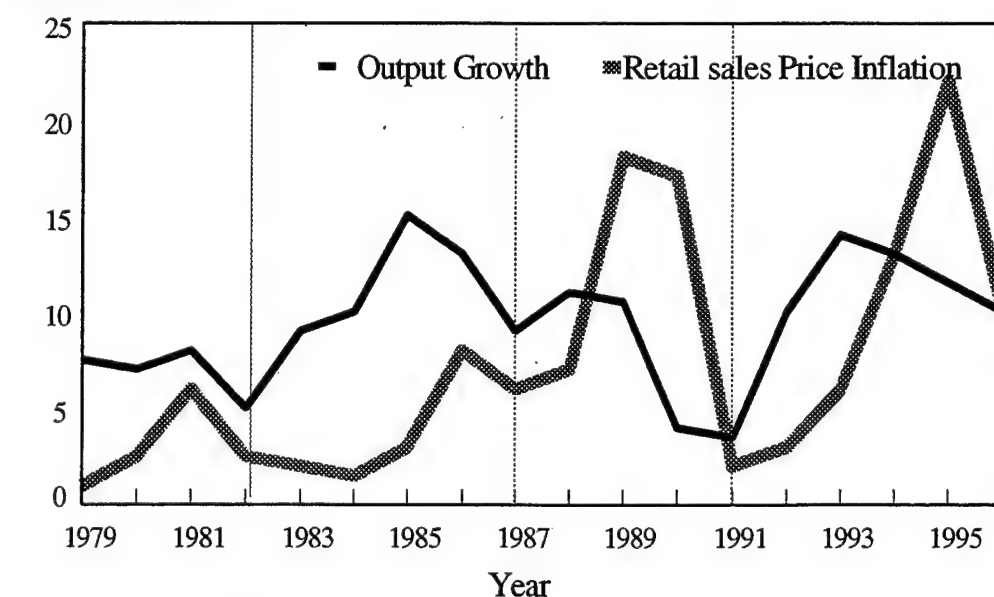
affecting SOEs in the previous two phases, the Phase III changes were not effective in altering SOE problems.

Significant Reforms:

- Market forces dedicated to playing a primary role in resource allocation
- Strengthen and develop infrastructure for better macroeconomic control
- Increase market orientation by:
 - Widening central bank reforms
 - Widening of financial sectors
 - Fiscal system improved
 - Exchange and trade system improved
- Accelerate SOE reforms

Chart 1 shows PRC output growth and inflation for the years after Deng implemented the reforms. The reform period shows four distinct cycles (1978-81, 81-87, 87-91, 91-present) where a drop in output was countered by a new phase of reforms. In addition, of note is the relationship between the two series, inflation lagged slightly behind output, but follows the same cycles. This is indicative of sound macro economic policies.

Chart 1. 4 Cycles of Output Growth and Inflation



Source: IMF 1997

The Oxford Review of Economics asserts that Deng's approach to reform began with no clear path or stated endpoint.. It is not even obvious if he had a market economy in mind as he implemented the original reforms. This trial and error style is what the Chinese call *moshitouguohe*, "crossing the river by groping for stones along the way."²⁶ The next logical step is to identify the sources of growth and determine the results of the reforms to facilitate forecasting the future of the PRC economy.

²⁶ Ibid., 6.

IV. SOURCES OF GROWTH IN THE PRC ECONOMY

Identification and categorization of the sources for economic growth are critical to enable the forecasting of a system's future. Only certain types of growth are sustainable. For example, in the neoclassical model, growth derived from direct factor inputs; labor and capital will run into diminishing returns and contribute a decreasing proportion to output.²⁷ Diminishing returns, a characteristic of the capital and labor inputs, signifies that an increase in either input will, over time, contribute less to the increase in output. Using this model, an increase in capital or labor is essentially a one-time boost to output. An increase in the intensive factors (an example of which is increased productivity), on the other hand, does not suffer from diminishing returns and can lead to continued increase in output.

Recent economic literature concerning economic growth in the PRC has focused on that economy's sources of growth. These include: an International Monetary Fund (IMF) study by Zuli Hu and Mohsin Khan, Eduardo Borensztein and Jonathan Ostry writing for the American Economic Review, Charles Wolf, Jr., K. C. Yeh, Anil Bamezai, Donald P. Henry and Michael Kennedy writing for the Rand Co., and a study by the World Bank. There is no doubt that the PRC has experienced four decades of strong growth. The real issues are how the growth occurred, how it changed over time, and whether it is sustainable into the long-term future.

²⁷ Anonymous, "Economic Growth, Explaining the Mystery," *The Economist* 322, no. 7740 (January 4, 1992).

Agricultural growth provided a larger portion of non-state sector growth from 1978 to 1984 than from 1984 to 1993. This is indicative of a one-time boost in productivity experienced in the first years after reforms established household farming units.²⁸

During the pre-reform period, a significant amount of the agricultural labor was underemployed. This is significant because as workers moved into the industry and service sectors their activities became a more important source of productivity growth. In 1978, agricultural employment was more than 70 percent of the workforce, this fell to 54 percent in 1994.²⁹ This shift enabled a dramatic rise in the number of non-state enterprises over the reform period. Tens of millions of the displaced workers moved to the value added manufacturing sector where they were more productive.

China's non-state sector of the economy grew much faster than the state sector, which is comprised of many SOEs. Table 1 shows growth rates for various sub sectors of the PRC economy from 1979 to 1993. That period is also broken into two parts, 1979-84 and 1985-93. The non-state sector includes agriculture (mostly at the household level), rural industry, private enterprise, urban collectives and joint ventures.

²⁸ Jeffrey Sachs and Wing Thye Woo, "Understanding China's Economic Performance," *National Bureau of Economic Research Working Paper 5935*, 10.

²⁹ Zuli Hu and Mohsin Khan, "Why is China Growing So Fast?" *IMF Working Paper* (IMF, July 1996), 14.

Table 1: Compound Growth Rate by Sector, and Ownership in the Industrial Sector

	Growth in 1979-93	Growth in 1979-84	Growth in 1985-93
Primary sector	5.2	7.3	3.8
Industrial State Owned Enterprises	5.8	6.8	5.2
Industrial Cooperative Owned Enterprises	18.1	15.5	19.8
Individual-owned Industrial Enterprises	N/A	N/A	73.4
Other Ownership Forms of Industrial Enterprises	N/A	N/A	49.4
Construction Sector	10.6	10.2	10.9
Tertiary Sector	10.0	10.8	9.4
Memo Item: Industrial non-SOEs	21.2	16.4	24.5

Growth rates calculated from series that have been consistently re-based on 1990 prices.

N/A=growth rates for 1979-84 and 1979-93 for industrial enterprises that are individually owned or of "other ownership form" cannot be calculated because their output levels in 1978 were zero.

Source: Sachs and Woo Table 3

The establishment of SEZs attracted large amounts of FDI, which had been almost zero in the pre 1979 period. By 1994, cumulative FDI reached \$95.6 billion (US). Furthermore, the joint ventures and foreign owned enterprises received significant technological and managerial expertise spillover from outside of the system. These ventures produced items that transferred China into an export powerhouse. Hu and Khan expand this idea:

Manufacturing exports in particular had been expanding in U.S. dollar terms at 19 percent a year in the 1981-94 period. The ratio of trade to national output increased from a little over 10 percent in 1978 to over 60 percent by 1994.³⁰

³⁰ Ibid., 14.

This indicates that the PRC economy was in a position for reforms to increase productivity and to spur growth.

Beyond privatization and agricultural reform, China experienced considerable growth in the export sector. This is similar to models of other Asian countries. The export sector optimized the growing liberalization of China's private enterprise, since many exports come from the non-state sector, specifically TVEs and private firms. Exports from private enterprises were often financed with foreign investment.

Of China's reforms, Sachs and Woo recognize two different schools concerning the method in which this growth developed, the experimentalist, and the convergence.³¹ The experimentalist school believes that China's success is based on the specific evolution of programs that were intentionally designed to maintain both the Communist party system and a growing economy. The second school, the convergence, believes that PRC success is a result of harmonization with neighboring non-socialist market economies, the Asian Tigers. Furthermore, the convergence school states "that the 'innovative' non-capitalist institutions are responses to China's political circumstances and not to its economic circumstances."³² The main difference between the two schools comes down to assessing the sources of economic growth in the PRC economy. The experimentalist school attributes the growth essentially to being in the right place at the right time with the right policy concerning trade. Gains in GNP growth from the opening to foreign trade would be more difficult to sustain than productivity gains from a systematic evolution.

³¹ Sachs and Woo, "Understanding China's Economic Performance."

³² Ibid, Introduction.

Table 2. Summary of Key Differences Between Experimentalist and Convergence Schools

	Experimentalist School	Convergence School
Reasons for gradualism	Economic experimentation	Political compromise; ideological commitment to state ownership
Outcomes in the SOEs	Substantial improvements in production efficiency	Little technical progress; and over-compensation of SOE personnel and over-investment that weaken the fiscal situation
Source: Sachs and Woo, Table 2.		

Sachs and Woo admit that the real system is probably a mix of the ideals of the two schools, but they side with convergence. Of the most recent growth Sachs and Woo write:

In our view, the recent trend, quite strongly, has been towards harmonization rather than innovation. In our understanding, this trend towards harmonization is the result of internal pressures as well as explicit external pressures towards harmonization, such as China's quest to join the World Trade Organization."³³

Additionally, Sachs and Woo write about the apparent gradualism of Deng's reforms:

The convergence school also holds that China's gradualism results primarily from a lack of consensus over the proper course, with power still divided between market reformers and old-style socialists; and that the "innovative" non-capitalist institutions are responses to China political circumstances and not to its economic circumstances.³⁴

³³ Ibid., 42.

³⁴ Ibid., Abstract

This paragraph implies that China was forced to boost national wealth by promoting a market economy while at the same time, ensuring that the party leaders maintained wealth and influence.

It is important to note that PRC economic growth increased immediately after the initiation of reforms. Hu and Khan, writing for the IMF, do give credit to foreign trade, but their orientation is mostly toward convergence. They believe that the gradual pace of program implementation helped the move toward privatization, fostering competition and therefore, efficiency. They explain the sources of the initial gains as follows:

Relatively high savings and investment rates (averaging around 35 percent of GDP); improvements in the structure of incentives and ownership; a relatively well-trained labor force; and the gradual opening of the economy to foreign trade and investment, as well as linkages with Hong Kong, China and Taiwan Province of China, which account, in particular, for a large share of direct investment in mainland China. China is also seen as having benefited from the "advantages" of backwardness, notably the potential for significant productivity improvements related to the transfer of resources out of low-productivity agriculture into manufacturing.³⁵

The differences between the two schools described by Sachs and Woo are described in Table 2.

IMF and World Bank researchers attempted to categorize these causes in order to predict sustainability. Hu and Khan in an IMF study, used the neoclassical model to study the growth of the PRC economy. Of this method, they wrote: "It is an appropriate first step in looking at the Chinese economy and yields useful 'benchmark' estimates for future research."³⁶ They found that while increases in labor and capital inputs did

³⁵ International Monetary Fund, "China- Growth and Economic Reforms," (1997), 123.

³⁶ Hu and Khan, "Why is China Growing So Fast?" 4.

contribute significant growth during the reform period, the largest portion of growth was caused by increases in productivity. The results of both the IMF study and the World Bank study are listed in Table 3.

Table 3. China: Alternative Estimates of the Sources of Economic Growth

	Hu and Khan (1996)		World Bank (1997)
	1953-78	1979-94	1978-95
Growth Rates			
Output	5.8	9.3	9.4
Physical capital input	6.2	7.7	8.8
Labor Input	2.5	2.7	2.4
Human capital input			2.7
Residual	1.1	3.9	4.3
Proportions of output growth accounted for by			
Physical capital input	65.2	45.6	37.0
Labor input	16.8	12.8	7.5
Human Capital input			8.6
Residual	18.0	41.6	46.0

Sources: Zuli Hu and Mohsin S. Khan, "Why Is China Growing So Fast?" Staff Papers, IMF Vol. 44 (March 1997), 103-31, World Bank, China 2020: Challenges in the 21st Century (Washington, 1997).

Numbers may not add to 100 due to rounding.

The residual from Table 3 is important and cannot be overstated for its use in determining future growth possibilities. The IMF provides three potential causes for this residual: mismeasurement of output growth, sectoral reallocation of resources, and general improvements in productivity. Mismeasurement could be caused by an "overestimate of economic growth caused by under-deflation of nominal output."³⁷

³⁷ Ibid., 23.

Productivity could be improved by the reallocation of resources from low to high productivity sectors. This intensive factor has potential for future productivity gains. Finally, general improvements are also intensive and studies do support the theory that non-state sector firms operate more efficiently than SOEs. The last two possible causes signify that the growth from this productivity increases and is therefore sustainable.

Chart 2. Sources of Economic Growth

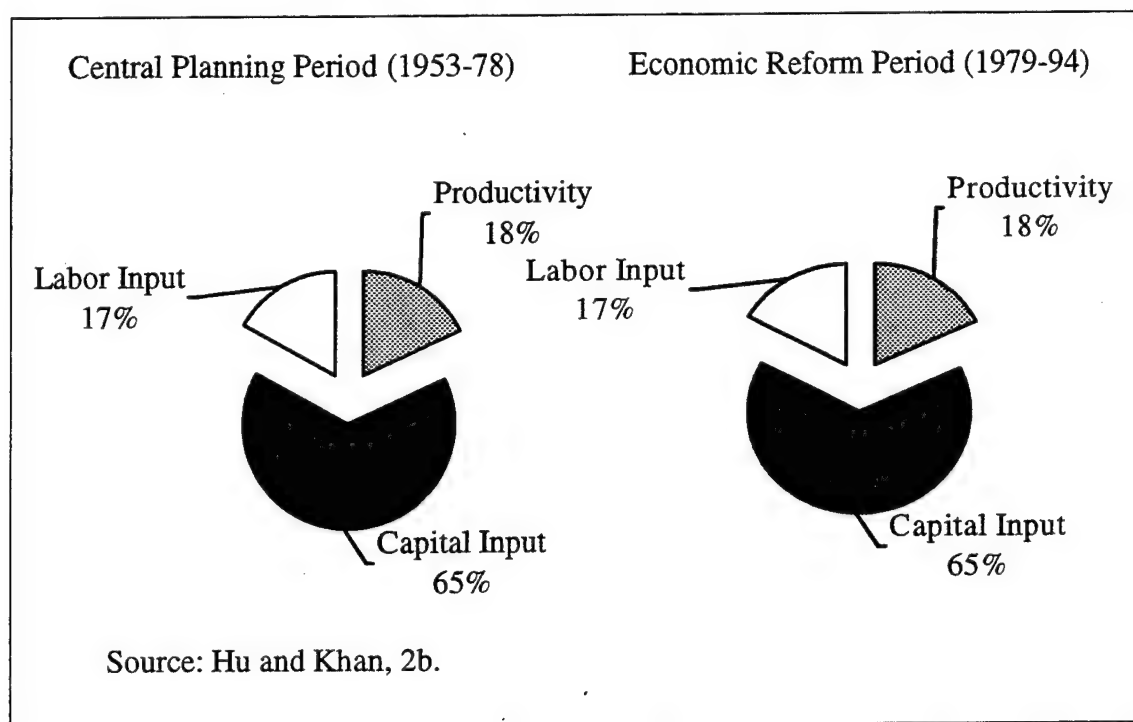


Chart 2 shows the IMF findings concerning sources of economic growth from 1953-1994 divided into the central planning period and the post reform period. The contributions to growth from capital and labor were surpassed by increases from productivity. This provides a strong argument against the findings of Sachs and Woo.

The IMF study points out that in the pre-reform period of 1952 to 1978, capital formation was responsible for 65 percent of the economic output while productivity increases were responsible for 18 percent of the growth. In the post reform period until the time of the study (1979 – 1994) productivity increases were responsible for 42 percent of the growth. Even more optimistically, in the period between 1990 and 1994, an increase in productivity was responsible for more than half of the growth in output while capital formation produced one third of the growth. This study also recognized that the original reforms produced significant growth, a main part of which was caused by physical investment. These findings signify that the importance of investment declined in the last decade when compared to productivity. This is important because productivity does not suffer from diminishing returns, thus promoting the sustainability of the growth.

Hu and Khan identified four of the market-oriented reforms implemented in 1978 as responsible for the rapid growth of productivity in the post reform period found by Hu and Khan. These are reallocation of labor from agriculture to service sectors, rise of the non-state sector, China's "open door" policy (exemplified by SEZs), and export increases. The non-state sector benefited by the reallocation of labor and, in much the same manner, export income benefited from China's open door policy.

The conclusion that is drawn by the IMF rules out mismeasurements and attributes the residual to productivity increases. The PRC's economic growth is in fact sustainable, since the growth is caused by increases in efficiency or production, which is not susceptible to diminishing returns. The IMF states:

China's strong productivity growth, spurred by the 1978 market-oriented reforms, is the leading cause of China's unprecedented economic

performance. Despite significant obstacles relating to the measurement of economic variables in China, these findings hold up after various tests for robustness. As such, they offer an excellent jumping-off point for future research on the potential roles for productivity measures in other developing countries.³⁸

Hu and Khan address the opposing views to their research:

Therefore, the evidence from this study points to a somewhat different conclusion from that reached by Sachs and Woo (1996). Even though the efficiency gains brought about by earlier agricultural reforms may have dissipated, the sharp growth in the rural industry, the surge in foreign direct investment, the export boom, the further dismantling of the central planning system and the increasing market-orientation in the state-owned sector, have combined to boost aggregate productivity growth in the 1985-94 period, and even more so during 1990-94.³⁹

This identifies the differences between the PRC model and other Asian high-growth economies. Sachs and Woo stress that the growth is not the result of actual innovation, but harmonization with non-socialist economies. This would imply that the PRC is on the same road as South Korea, Thailand, Indonesia and Japan, only a couple of decades behind. They infer that if China suffers from problems similar to its neighbors, then the PRC economic growth might not be sustainable. Hu and Khan assert that as the reforms accelerated in the 1990 to 1994 period, the total factor productivity (TFP) grew at astonishing rates. The increasing value of output, other than capital in TFP, signifies that the PRC system is gaining from programs implemented, in contrast to other non-socialist countries.

This chapter outlines sources of post-reform economic growth in the PRC that will be combined with a forecast using the contribution of investment to Gross National

³⁸ Ibid., 6.

³⁹ Ibid., 20.

Product (GNP) in later chapters to predict possible future scenarios. The reforms enabled underemployed workers to be more productive in other forms of production while providing greater incentives for the remaining agriculture workers. These incentives boosted the initial growth that was seen in the agriculture sector. The opening of trade capitalized on the available labor (although disproportional in the coastal region) to gain productivity in higher value added sectors. Furthermore, the establishment of SEZs enabled an increase of capital in the form of FDI, which further boosted trade.

The various phases of the reform maintained productivity increases while at the same time, keeping the economy from totally overheating. This is indicative of sound macro economic policy from a developing country perspective.

V. ECONOMIC FORECASTING

In this section, a review of several existing forecasts will be compared to one performed specifically for this study. This study of economic growth focuses on increases in Gross National Product (GNP). There are many economic indicators that can be analyzed in an economic growth-type study; a list from a Rand Corporation study includes

Exports and imports, capital flows, per capita income, domestic capital formation, resource allocations for research and development and science and technology, international holdings of assets and liabilities, demographic changes, and so on.⁴⁰

Several of these items will be discussed in more detail in the following section. The choice of GNP as the center of analysis is based on several reasons. Charles Wolf, et. al consider GNP to be the most useful single indicator of economic size for comparisons over long periods of time. In addition, many of the indicators listed above are functions of GNP and can therefore be predicted in terms of percentage of GNP. The availability of quality data concerning the PRC economy is suspect, forcing the use of a basic and widely used indicator drawn from a single source to limit errors from reporting inefficiencies.

A. PUBLISHED FORECASTS

A 1989 estimate of economic and military trends was conducted as part of Rand's International Economic Policy program, sponsored by the Office of the Under Secretary

⁴⁰ *Long-term Economic and Military Trends, 1950-2010*, The Rand Corporation, (1989), 2.

of Defense for Policy. The 1989 Rand study applied an aggregate national production function by using capital, labor, and factor productivity as inputs to produce an estimated GNP as the output. The study predicted growth rates for the PRC of 4.7 percent (1990-2000) and 4.7 percent (2000-2010)⁴¹. The predicted number for the 1990 to 2000 period appears low compared to the actual average between 1990 and 1996 of 10.82 percent.⁴² The 1989 Rand study did outline the uncertainty involved with conducting this type of exercise on the PRC economy. Two major sources of error identified were GNP estimation errors caused by currency conversion,⁴³ and estimation errors caused by the indirect calculation of military spending and capital stock. The authors of this study do recognize the possibility that their forecast is on the low side. Of note, concerning this study is the findings concerning the Soviet Union (USSR). The forecast did recognize that the USSR was at a point of uncertainty with respect to President Gorbachev's policies and *perestroika*. In an example of the difficulty of predicting the unforeseen, the study did not however, predict the collapse of the USSR economic system

Some of the same writers (Charles Wolf, JR., Donald P. Henry and Michael Kennedy) produced another Rand report in 1995 that again predicted long term trends, this time for the period 1994-2015. This study included only five Asian countries and the United States. The 1995 study again used GNP increases as an indicator of growth and compared the countries studied in terms of purchasing power parity (PPP). A hierarchically linked model derived GDP by comparing demographic data, military

⁴¹ Ibid., 8.

⁴² The World Bank, *World Tables 1997*, CD ROM edition (1997).

⁴³ The 1989 Rand study compared several different economies in terms of GNP growth. This method required the conversion of all currency figures from local money into US dollars.

spending and military capital stock. In computing China's GDP growth, the 1995 study assumed two alternative scenarios:⁴⁴

1. A "stable-growth" scenario, in which capital formation and factor productivity are higher (although still well below their actual levels in recent years), resulting in an average annual growth of 4.9 percent over the 1994-2015 period.
2. A "disrupted-growth" scenario, in which turmoil and disruption are assumed to accompany a possible leadership succession crisis, and in which some degree of regional fragmentation ensues. The result is to lower the rate of capital formation and factor productivity growth, yielding an average annual GDP growth of 3 percent over the period.

The "disrupted-growth" scenario still produced GDP growth rates for the PRC higher than the predicted levels of GDP growth in the United States (2.2 percent). Under the "stable-growth" scenario, the PRC GNP is predicted to surpass that of the US approximately 2006 and military spending of the PRC will surpass that of the US in approximately 2002. The per capita level of GNP for the PRC is forecast to lag well behind that of the US and Japan for both scenarios.

B. GROSS NATIONAL PRODUCT CORRELATED WITH INVESTMENT

The above studies linked the supply side of the PRC economy in their models to predict future growth in GNP. A valuable addition to these would be an investigation of the relationship between GNP and Gross Domestic Investment (GDI). Two definitions are necessary for the purpose of this study.

GNP at market prices (constant 1987 local)

GNP is the sum of gross value added by all resident producers plus any taxes (less subsidies) that are not included in the valuation of output plus net receipts of primary income (employee compensation and property

⁴⁴ *Long-term Economic and Military Trends 1994-2015*, The Rand Corporation (1995), xii.

income) from nonresident sources. Data are in constant 1987 local currency.⁴⁵

Gross domestic investment (constant 1987 local)

Gross domestic investment consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Fixed assets cover land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including commercial and industrial buildings, offices, schools, hospitals, and private residential buildings. Data are expressed in constant 1987 local currency.⁴⁶

This exercise will use autoregressive-distributed lag (ARDL) and error correction modeling (ECM) to enable the identification of the relationship between GNP and gross domestic investment (GDI). This process determines the long run relationship between the dependant variable (GNP) and the independent variable (GDI).

The ECM indicates the trends developed as the dependant variable follows fluctuations in the independent variable. The ECM also rejects inaccuracies associated with spurious regressions (problems caused by the variables that have correctional relationships over the long run by coincidence. The analysis was performed for the period 1975 to 1995. The results are listed in Table 4.

The error correction term (ecm-1) signifies that a long-run relationship is significant between GNP and GDI. The negative value of the error correction term is significant in that it signifies that GNP will tend to follow GDI. That is that if investment falls in the PRC economic system, GNP will also decline. In addition, if investment rises, then GNP will also rise. The government can control investment to keep the

⁴⁵ World Bank, *World Tables 1997*, CD ROM edition (1997).

⁴⁶ Ibid.

economy within reasonable growth rates, this is an important quality that will facilitate more accurate forecasting.⁴⁷

Table 4. Error Correction Representation of ARDL. PRC

Dependent variable is dGNP. 21 observations used for estimation from 1975 to 1995.			
Regressor	Coefficient	Standard Error	T-ratio [Prob]
dGNP1	-.23	.28	-.82 [.423]
dGNP2	-.34	.21	-1.59 [.133]
dGNP3	-.50	.22	-2.28 [.037]
dGDI	1.13	.33	3.46 [.004]
dINTPT	-1.13E=10	1.59E=10	-.71 [.488]
Ecm (-1)	-.26	.12	-2.15 [.048]

List of additional temporary variables created:

dGNP = GNP-GNP(-1)

dGNP1 = GNP (-1)-GNP (-2)

dGNP2 = GNP (-2)-GNP (-3)

dGNP3 = GNP (-3)-GNP (-4)

dGDI = GDI-GDI (-1)

dINTPT = INTPT-INTPT (-1)

Ecm +GNP -.086678*GDI -.55614*INTPT

R-Squared = .91200; R-Bar-Squared=.88266; F-Statistic = 31.0902 [.000]

Source: Data from World Bank World Tables, analysis performed using Microfit4.0 (Windows version) by Pesaran & Persaran.

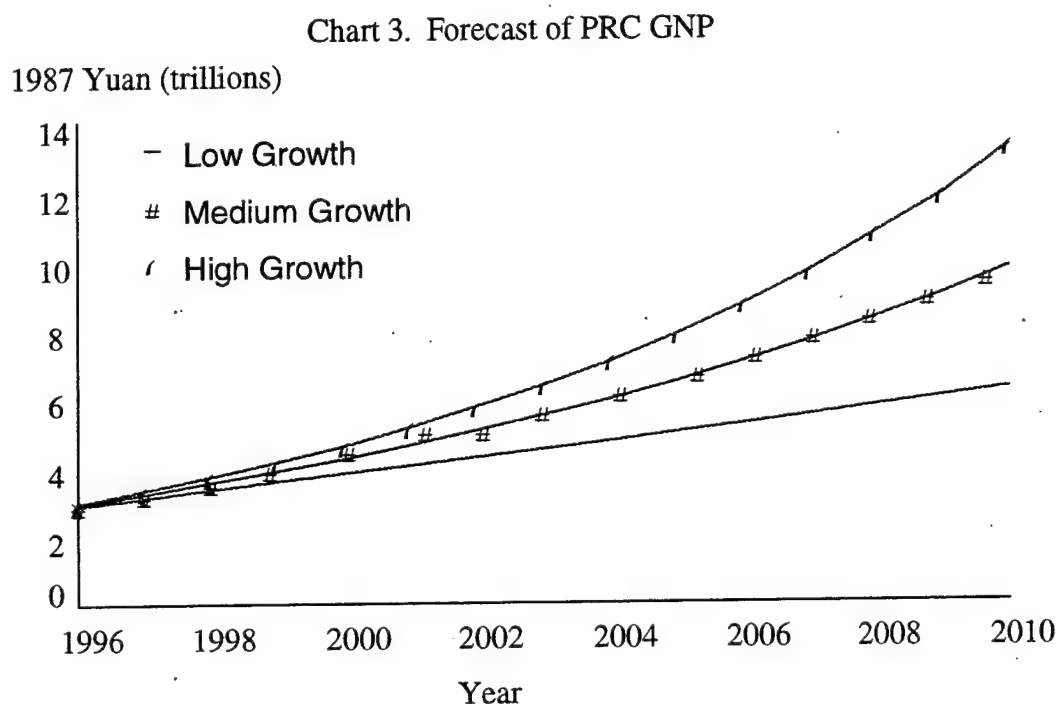
To forecast GNP changes in future years, three values of predicted investment were entered into the Microfit4.0 ARDL model and run for the GNP, GDI regression performed above. This produces three future forecasts that will be used in the next chapter to develop a high growth scenario, a low growth scenario and a third mid-level growth scenario. Three sets of values were used for future investment:

1. An average percentage increase of GDI for the last 20 years (11.2 percent), for the high growth scenario.

⁴⁷ Robert Looney, "Defense Expenditures and Macroeconomic Stabilization in Pakistan: A test of the Military Keynesianism Hypothesis," *Rivista Internazionale di Scienze economiche e commerciali*, forthcoming 1998.

2. A value for investments that keep GDI at a percentage of GNP at the low limits for the last 20 years (GDI = 32.52 percent of GDP in 1981). This will produce the low growth scenario.
3. A value for investment that is in between the high and low values.

Chart 3 depicts forecasted growth for the three scenarios. The forecast is presented in tabular form in the Appendix. The data file used with the ARDL model is also in the Appendix.



VI. SCENARIOS FOR CHINA'S FUTURE

This exercise to forecast future growth in the PRC will consist of three major sections. The first section will identify elements critical to the future of the PRC economy that exist within the PRC. These domestic elements include economic and political factors that have an impact on the GNP growth. In the second section, issues will be identified and discussed that exist external to the PRC system. How China continues its integration into the world market, and the condition of that marketplace, will have a critical impact on the PRC's future. Finally, the third section of this chapter will develop three different scenarios of economic growth for the next decade in the PRC. Several different combinations of the identified variables will be mixed and various possibilities tabulated. It is important to distinguish between elements that are external to the PRC economic system and those that are contained within the system. Thus, the potential scenarios include combinations of good and poor, external and internal elements. An economic forecasting exercise by no means pretends to be an exact indicator of the future of an economic system, and a forecasting effort to quantify the future of the PRC economy specifically, is inherently on the inaccurate side of the entire economic forecasting accuracy spectrum. The PRC system is unlike any other economy in the world and therefore makes any kind of comparison difficult.

A. DOMESTIC ELEMENTS OF THE PRC ECONOMIC FUTURE

In order to forecast future trends in the PRC economy key factors that have contributed to growth, and will contribute in the future, combine with new elements that have the potential to impact growth will provide an outline for the growth scenarios.

1. Human Capital

Along with its transition from a planned economy to a market economy, the PRC is transitioning from an agrarian society into an industrial society; the way that the PRC system utilizes its workforce in this shift is critical to future growth. Throughout the reform period, a great source of China's productivity increase has been the development of human capital resources. Like other East Asian states, China enjoys the benefits of a relatively highly educated workforce. As the OECD recognizes:

China's human resources were always well ahead of most countries', with a comparable level of per capita income... Confucian values among other influences had created an elite of highly educated people long before the communists came to power in 1949. Also like other East Asian states, China began a rapid expansion of its educational system at all levels in the 1950s, and rewarded this effort after 1978.⁴⁸

China's brain trust can potentially take advantage of the hundreds of thousands of scholars sent abroad to study at the best schools that the world has to offer. An issue that will determine the effectiveness of this resource is the number of students that return to the PRC after receiving their degrees. As of 1995, more than 90 percent of the scholars receiving degrees in Europe and the US remained in those countries. The OECD, while noting this statistic, recognizes that this is not a 'brain drain' unique to the PRC, and is potentially only a temporary problem. "But over 90 percent of the students Korea and

⁴⁸ OECD, *China in the 21st Century Long-term Global Implications*, 24.

Chinese Taipei sent abroad also did not return during the first two decades when these two economies began to grow rapidly.” This is similar to the situation in the PRC. Then as the economies of the student’s home countries developed and held better opportunities, things changed. “However, by the 1970s many students from Korea and Chinese Taipei were going home and by the 1980s, most were returning, often after working for years in places like Silicon Valley.”⁴⁹

The PRC’s population poses challenges concerning future growth. Regional disparities in unemployment, technical expertise and developed infrastructure will have a critical affect on potential fractionalization. The World Bank notes that 35 to 40 percent of the agriculture workforce are still underemployed in the agrarian sector. “These workers could earn significantly more in nonagricultural activities.”⁵⁰ Not only would these workers earn higher wages, they could contribute significantly to economic growth.

China’s population trends pose a significant problem for Chinese society. The country is experiencing a decrease in birth rates and will be reaching zero population growth in about 25 years.⁵¹ This radical shift in demography will soon produce a large percent of the population that is beyond the working age, who will be supported by a small number of workers.

The issue of unemployment is difficult to analyze in the PRC system. There are actually a growing number of workers employed in the SOE sector. These enterprises

⁴⁹ Both quotations and the statistics provided in this paragraph taken from: OECD, *China in the 21st Century Long-term Global Implications*, 24.

⁵⁰ The World Bank, *China 2020 Development Challenges in the new Century*, (World Bank, 1997), 45.

⁵¹ Nicholas Eberstadt, “Demographic Clouds on China’s Horizon,” *The American Enterprise*; (Washington, Jul/Aug 1998), 2.

employ a large part of the population and provide an effective social welfare system that has come to be known as the "Iron Rice Bowl." All SOE workers are technically counted as employed but large numbers of workers produce a decreasing proportion of the PRC's economic output, this appears very much like a socialist economy.⁵² As reforms of the SOEs continue, millions of workers will be added to the numbers of officially unemployed. The significance of the SOE sector and its influence on unemployment will be covered in the next section.

2. State Owned Enterprises

A study of China's SOEs highlights one of the core issues with market reforms in the Chinese Communist system. Before 1979, China's SOEs operated in a planned economy with very little freedom of decision making and almost no budget restraints from the state. Some characteristics of the SOEs reflect common criticisms often aimed at socialist systems. As stated in the previous section, the SOE sector accounts for a continually shrinking percentage of the PRC gross domestic product (GDP) compared to the non-state sector, while at the same time, it employing a disproportionate amount of rural labor.⁵³ In addition, the SOEs absorb almost two-thirds of the available bank credit. These figures signify substantial inefficiencies in the SOEs. Lack of local control reduces management flexibility and induces inefficiency. Lack of local control also reduces worker motivation.

⁵² Martin Wolfe, "Asian Crisis: China's Temptation" Online. Available http://web.nps.navy.mil/~relooney/3041_434.htm, 5 August 1998.

⁵³ IMF, "China - Growth and Economic reforms," *World Report 1997*, (IMF 1997), 125.

The SOE sector was a source of reform in all four periods. This indicates that state leaders recognized the inherent inefficiency of the SOEs, but because of ingrained ideology, the leaders resisted change, and reform measures showed no effectiveness. Beginning in 1979, SOE managers were right to make decisions incrementally. At first they were allowed to make decisions about bonuses, how, and what to produce. Soon managers made pricing, marketing, and investment decisions.

The method of reform in this area is to implement new practices in a small number of SOEs experimentally, then if successful, expanded to other SOEs. In the period of expansion, other reforms were implemented and expanded. Thus, at any one time there are several reforms being implemented simultaneously.⁵⁴ Thus far, the most significant reforms were those noted in Phase II providing increased autonomy for each enterprise and the management within. One reform that was not even considered until only recently is a change of ownership that would constitute a move towards privatization. Again, the socialist tradition hinders a move to a market economy.

The OECD identifies two reasons that reform in the SOE area has come slowly. First, because these enterprises employ such a large number of workers (SOE employment numbers are higher now than they were when reforms were initiated in 1978). Not only do the SOEs employ the workers; they also constitute a sort of a social service net by providing housing and healthcare. A decrease in the SOEs could result directly in a huge number of unemployed and homeless people, which could put an incapacitating burden on society. Secondly, reforms would take political power away

⁵⁴ Sachs and Woo, "Understanding China's Economic Performance," 17.

from the governmental elite that regulates the SOEs. The bureaucracy is simply reluctant to relinquish power. "Local governments and even the Ministry of Finance depend on the enterprises for revenue, including revenues over and above those required by the formal tax system."⁵⁵

OECD analysis sees three potential futures for PRC SOEs. The first is an ossification of the SOE bureaucracy, freezing reforms in their current state as a crippling combination of inefficiency and social support. A second progression, which could develop, is a complete release of the SOEs by the state. The enterprises would be forced to sink or swim on their own merits.⁵⁶ The third and most likely scenario for SOEs is that the enterprises be consolidated into large, quasi-state controlled conglomerates. This process is currently underway and the enterprises are starting to appear more similar to the South Korean Chaebols than the Western style corporations that US economists had hoped. This is an example of the Asian metaphor that the economies of Asia were "a flock of geese." The countries were all at different stages of development following the "lead goose," the Japanese economy. The PRC economy could represent a very big and slow goose that is just now catching up with the pack. One potential problem with this idea is that the Chinese could follow the Asian path to a fate similar to the other "tigers."⁵⁷ The OECD does see a positive solution:

The way out of this dilemma is for China to abandon hope of creating a Japanese/Korean-style system and to move toward an industrialization programme based mainly on market forces. Large parts of the licensing

⁵⁵ OECD, *China in the 21st Century Long-term Global Implications*, 25.

⁵⁶ *Ibid.*, 25.

⁵⁷ Richard Bernstein and Ross H. Munro, *The Coming Conflict with China*, (New York: Vintage Books, 1997), 177.

and control apparatus would have to be dismantled. Land and capital could be allocated at market-determined prices. International trade would have to be liberalised much further, perhaps through China's joining the World Trade Organization and abiding by its rules except for limited infant industry protection.⁵⁸

The ramifications, whatever reforms occur, will have a large impact on the future of the PRC economy. The SOEs may continue to drag the economy into decreasing growth or they could represent another source of improved productivity.

3. Industrial and Manufacturing Sectors

The PRC industrial sector has gained from the labor movement of the agricultural sector because of Deng's reforms. This area is a major source of the productivity increases highlighted by Hu and Kahn. For the PRC to maintain growth, the industrial sector must maintain efficiency. Growing inventories in many industrial sectors are an indicator of a decrease in efficiency of the system and a mentality of production for production's sake.⁵⁹

The PRC is trying to become a world economic power in much the same way that its neighboring countries have the progression through low-tech, labor intensive sectors to higher profit manufacturing benefiting from higher level of education and training. The OECD states:

China has an enormous reservoir of labour with a very low opportunity cost, and a functioning market economy should support both an economically efficient use of relatively abundant resources and a pattern of new investment and technological change which also reflects relative factor availability.⁶⁰

⁵⁸ OECD, *China in the 21st Century Long-term Global Implications*, 25.

⁵⁹ Nicholas Lardy, "China and the Asian contagion," *Foreign Affairs*, New York, Jul/Aug 1998, 7.

⁶⁰ OECD, *China in the 21st Century Long-term Global Implications*, 40.

If the PRC is able to transition to areas of production in higher value added industries, GNP will continue to grow.

4. Agriculture Sector

The importance of the agricultural sector lies in two different issues, first there is the need to produce enough to feed a huge population. Second, to improve efficiency of labor, resource and environmental impact. The World Bank recognizes that the agriculture industry was able to produce at a level to sufficiently feed the PRC population because of the introduction of the household responsibility system, but that growth is slowing because of five constraints to domestic production:⁶¹

1. Reforms in the market for food grains
2. Institutional change in the market for fertilizer
3. Investment in agricultural research
4. Investment in irrigation
5. Land reclamation and development

The system is showing signs of growing pains; trying to keep up with a growing population and an increasing demand to urbanize arable land. PRC intervention with the world agricultural market plays an important role in the future and will be covered in later sections.

5. Infrastructure Strains

China does not have the infrastructure of a well-developed country.⁶² Bottlenecks and inefficiencies in areas that include the production and distribution of food and energy keep the PRC economy from achieving higher rates of growth, where if efficiently handled, these could be sources of increased productivity to bolster stronger and longer

⁶¹ *China 2020*, 62.

⁶² World Bank, *Country Study*.

lasting growth. These weaknesses are in part the result of decades of under investment in the transportation sector. Infrastructure strain severity differs regionally, the World Bank explains: "not least because of the importance attached to regional self-sufficiency during the pre-reform era. It must also be recognized that any economy would have had difficulties keeping up in terms of provision of transport infrastructure with the rapid overall rate of economic growth in the 1980s."⁶³

6. Financial and Service Sector Development

China has benefited from large amounts of capital flowing into its economy. This has occurred in the form of FDI and foreign exchange availability from international trade. The amount of FDI in the PRC increased exponentially in the early 1990s to the current level of nearly \$40 billion per year, making China the world's leading recipient of FDI. China's large, low cost, relatively high skill work force attracts FDI from many countries, the top three of which are Taiwan, Japan and the US. Until the PRC take over of Hong Kong in 1997, Hong Kong was the number one source of FDI in China. That money is now considered internal investments. Taiwan's FDI is an odd connection binding the interests of two potentially hostile governments. Most FDI in China is in low end manufacturing, much of which is simple assembly, and re-export plants. Although, recent investment trends have been in more advanced sectors such as automobiles, electronics, and aerospace. This is a move to establish a high-tech foothold for increased future profits.⁶⁴ Specific sources of FDI and China's foreign exchange will be covered later, in the external factor section.

⁶³ Ibid., xix.

⁶⁴ Greg Mastel, *The Rise of the Chinese Economy, The Middle Kingdom Emerges*, 9.

Domestic investment is a pillar of the policy used by PRC leaders to control the macroeconomic cycles that the economy experiences. The future of GDI will be an indication of the economic policy direction that the PRC is taking. Economic policy makers tie GNP growth figures directly to unemployment levels and are striving to maintain better than eight percent growth to prevent large numbers of unemployed workers from dragging down the economy. Domestic investment levels seem to be the avenue that is used to stimulate growth levels. This method seems to be working, as large increases in investment on infrastructure in the first three quarters of 1998 is starting to show result in the form of higher GNP growth.⁶⁵

In the command economy of the pre-reform period, a public service sector was considered parasitic as the governmental structure employed workers to conduct all services. Now that there is a growing non-state sector and the SOEs are generating ever-decreasing amounts of tax revenues, there are potential gains in this important area. In theory, as the system moves towards marketization the need for a service sector will create a vacuum, which will be filled with persons who will establish the required services; this will be kept efficient by market competition. In 1993, China's share of employment in services was at 21.2 percent. This is quite low when compared to that of the Republic of Korea (47.7), or the average OECD country (between 65 and 70 percent).⁶⁶ If the economy continues to grow, this is an area of potential increased productivity.

⁶⁵ Craig S. Smith, "Chinese Economy Picks Up On State Spending," *The Wall Street Journal*, 19 October 1998, C17.

⁶⁶ OECD, *China in the 21st Century Long-term Global Implications*, 28.

One service area in which China needs to expand is the financial sector. Reforms are underway, the state commercialized state banks by lowering decision-making levels concerning lending decisions. A potential problem is in the area of non-performing loans to float the SOEs. Governmental authorities designated 1997 as the year to strengthen accounting and loan standards, to try to quantify and optimize the situation in the banking system.⁶⁷

7. Political Stability and Government Policy

The stresses and strains involved with an economy that has experienced 20 years of high growth confined within the physical and social infrastructure such as in the PRC system are immense. Volumes of writings have been dedicated to outlining the many possible directions a changing CCP will go in the face of the many possible situations. Will the government revert to the authoritarian system of the pre-reform period? Will the penetration of the world market drive the PRC to democracy? The answer is probably somewhere between these two extremes. The OECD recognizes that speculation concerning this issue is beyond the level of that organization's economists.⁶⁸ It is therefore beyond the level of this paper. This paper will utilize the OECD's prediction concerning consequences of social change in the PRC.

If there is a serious political disorder, it will feed back on economic policy and performance in ways that will keep economic growth low. Alternatively, if there is political stability as well as sensible economic policies, economic growth is likely to be rapid, which will in turn, contribute to continued political stability. Economic growth

⁶⁷ IMF "China Growth and Economic reforms" 125.

⁶⁸ OECD, *China in the 21st Century Long-term Global Implications*.

alone may not be capable of dampening the tensions that could upset the political system, but it is hard to imagine how these tensions can be kept under control in the absence of sustained economic growth.⁶⁹

B. GROWTH ISSUES EXTERNAL TO THE PRC SYSTEM

From an international perspective, three important factors rest on the PRC's relations with the world outside of "the Middle Kingdom," opportunities to export manufactured goods, foreign direct investment and a proper place in the world order.

1. Integration with the World Economy

By virtue of its sheer size, China is a major exporter in the world economy and under each of the growth scenarios, the PRC will become the world's second largest economy some time in the first decade of the 21st century.⁷⁰ Additionally, if the PRC is to attain the goal of achieving a decent level of living for its large population, it must continue to expand exports. This could have a drastic effect on the international market, which then would displace other exporters to make room for exports from the PRC.

China's foreign exchange availability benefits greatly from the large amounts of FDI received because of the PRC's booming export section. In 1972, PRC exports were at about the \$2 billion level. The Deng reforms enabled China to become a major exporter reaching \$150 billion in 1995.⁷¹ This amounts to an annual increase of 17 percent. The PRC benefits from its large FDI because it represents long term investment

⁶⁹ Ibid., 30.

⁷⁰ Marcus Noland, "China and the International Economic System," Institute for International Economics, working paper 95-6, Online Available http://web.nps.navy.mil/~relooney/3040_476.htm, 5 November 1998, 1.

⁷¹ OECD, *China in the 21st Century Long-term Global Implications*, 22.

and keeps the system from falling victim to the liquidity problems associated with the Asian economic crisis (more on that later). A potential problem with a dependency on growing trade is the need to keep the high levels of growth. There are questions concerning whether or not the world economy can satisfy such growth from one country.

2. The Asian Economic Crisis

Steven Radelet and Jeffrey Sachs of the Harvard Institute for International Development conducted a thorough review of the Asian financial crisis while writing for the Brookings Papers on Economic Activity in early 1998. Radelet and Sachs concluded that the crisis was caused by proper intentions paired with incorrect actions, which were worsened by panic. The problems began as the markets of Indonesia, Korea and Thailand, all in positions of partially implemented banking reforms, made loans that would become unserviceable. This caused a liquidity problem and made the fragile systems extremely vulnerable to reverses of capital flows. Once it was obvious that the countries were carrying short-term deficits, inappropriate actions, some by the IMF, contributed to an unnecessary panic. As Radelet and Sachs write: "At a later stage, the IMF's exclusive focus on 'fixing' Asia, without proper regard to the root problems of international financial market instability, imposed excessive costs on the East Asian economies."⁷²

The East Asian countries were making an effort to reform their banking sector in a move away from authoritarian control to a more efficient market system. This made the weak link in the financing system of East Asia the inexperienced lending practices which

⁷² Steven Radelet and Jeffrey Sachs, "The East Asian Financial Crisis: Diagnosis, Remedies, Prospects," Brookings Papers on Economic Activity, (1:1998), 4.

were trying to take advantage of high growth markets. The problem was that the borrowers, also caught up in the high growth, were financing unproductive operations. Radlet and Sachs' outline of the crisis is rather long but worth quoting whole.

We point out that as the East Asian economies continued to achieve rapid economic growth in the 1990s, there were growing imbalances and weaknesses at both the microeconomic and macroeconomic levels. Most important, there was a rapid buildup of short-term external debt into weak financial systems — made possible both because East Asia's successful track record attracted foreign credits, and because partial financial market liberalization in the region opened new channels for the entry of foreign capital. The inflows led to appreciating real exchange rates, to a rapid expansion of bank lending, and in particular, to increasing vulnerability to a reversal in capital flows. When capital flows did wane in late 1996 and early 1997, a series of missteps by Asian governments, market participants, the IMF and the international community resulted in a financial panic. The crisis was much deeper than was either necessary or inevitable.⁷³

As of September of 1998, China has shown few symptoms of the crisis; several explanations account for this. The problem with the lack of transparency in the PRC system again makes economic data somewhat questionable, and this case is no different. All information presented here comes from Western economists who, naturally, view the world with a Western bias. Ironically, China's immunity to the Asian crisis stems partially from what westerners identified as a system weakness, bank reform. China has not taken off all of the restraints on central bank lending. This produced much less inflow of short-term capital in the early 1990s and therefore the PRC markets were not susceptible to the instability of the markets of the rest of Asia. China did not need the short-term capital that other markets required because of the huge amounts of FDI

⁷³ Ibid., 22.

discussed earlier in this paper. One of the benefits of FDI is that it tends to be long term in nature, preventing liquidity problems.

Problems that the PRC system has encountered are because of participation in a global and regional marketplace that is experiencing a slowdown. As the markets with which China does business have less purchasing power, the PRC can export less. This leads to a slowdown in income and economic growth.

Other external conditions may have an effect on China's future; one area is international pressure for the PRC to deal with internal issues that include the following: human rights, nuclear nonproliferation, nuclear testing, high-tech weapons sales, and predatory trade practices. This area also includes international military conflict.

C. SCENARIOS FOR THE FUTURE OF THE PRC ECONOMY

Figure 1 below provides a matrix, which illustrates the relationship between external market factors and internal conditions, combining to determine the PRC's future. The vertical axis presents external market factors from a low level of near worldwide recession at the origin to the optimistic level of truly free markets at the top of box 1. The horizontal axis presents the range of internal conditions and extends from an unstable government that is in the near collapse condition similar to that currently in Russia, at the origin, to a open governmental system of economic and political freedoms and effective reforms. The vertical axis represents the world around the PRC. The continuum for this category is from world economic depression to a thriving world economy, that of low trade barriers and international cooperation.

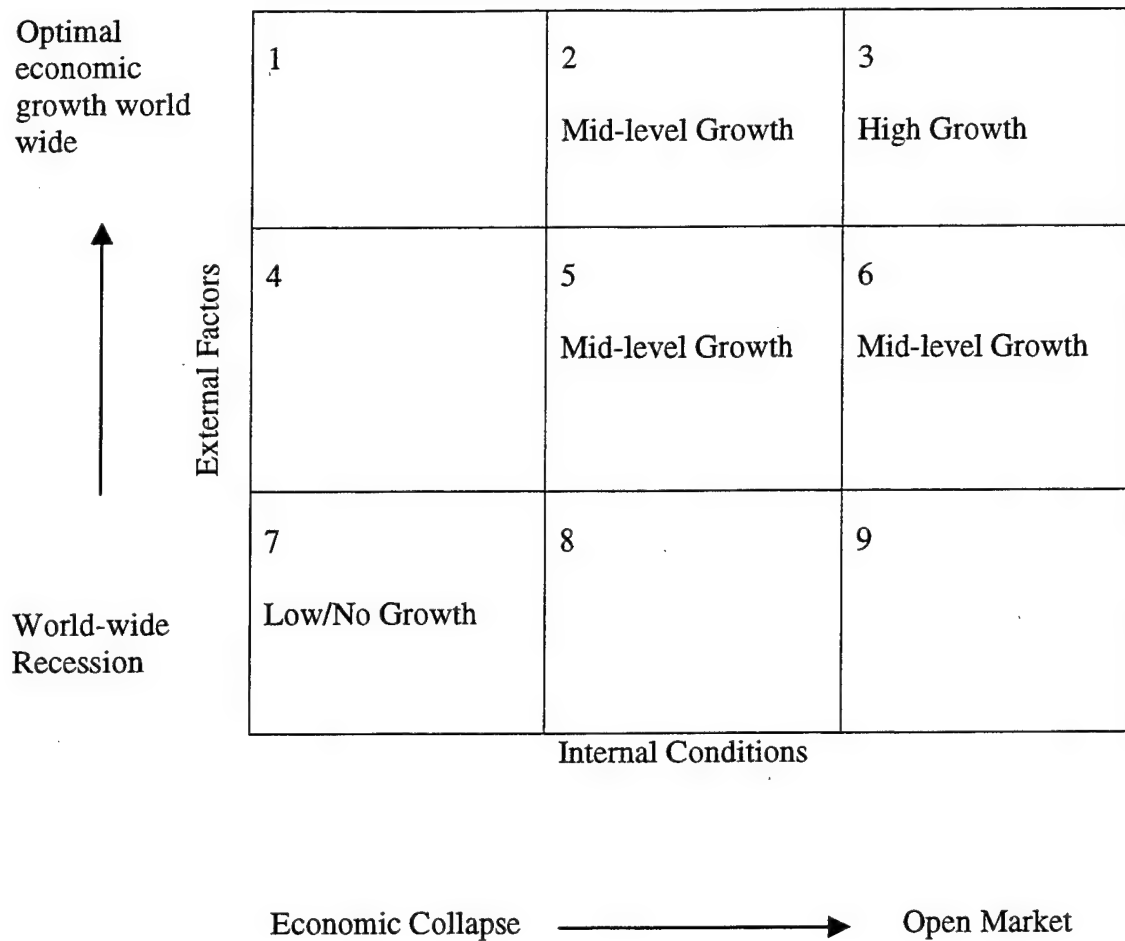


Figure 1. Scenario Possibilities

From Figure 1, three scenarios will be discussed. Scenario 1 is the high growth alternative (box 3). Scenario 2 is the middle scenario of boxes 2,5 and 6. Finally, scenario 3 is the low growth collapse model of box 7. Boxes 1,4,8 and 9 have not been included in scenario development because of the low likelihood of the extreme levels of the defining variables.

1. SCENARIO 1. Continued High Growth (11 percent)

This scenario has China growing at the same level as the last 20 years or higher. For this to be a realistic situation, nearly every factor needs to go right for China. The external factors are more straightforward to conceive than the internal. World markets must remain open and able to deal with China's growing level of power and exports. Increased foreign exchange and FDI would enable the country to take advantage of all listed opportunities and remove or avoid any potential barriers. In addition, the external environment must include a lack of any type of military conflict that would dampen international trade or force the PRC to spend resources on defense/armament that could be spent on infrastructure.

The internal requirements for economic growth are more complex. China must maintain its high savings and investment rates while building infrastructure and a social net to reduce potential dissatisfaction with unemployment and homelessness. All reforms identified in Phase III must be carried out, but care must be taken in banking reforms to ensure that problems do not arise similar to other East Asian countries.

A difficult transition will be the SOE sector. As discussed earlier, reforms in this area will reduce both the taxes received by the state and the bureaucratic power of the

elite. Corruption at all levels must be minimized as there is potential for a shift from the SOEs to a form of "crony capitalism."

Reform of the financial structure and continued growth may cause inflationary pressures that would require sound macroeconomic policy. The OECD asserts that if many of the optimum situations develop the momentum of the growth would likely dampen other potential problems. A table for the sequence of events in the high growth scenario is presented as Table 5.

2. SCENARIO 2. Mid-level Growth (7.5 percent)

This scenario groups box 2,5 and 6 from Figure 1, because they are possibilities if cascading events degrade either the external or internal issues. This section will be broken down into two situations, a deteriorating external environment and a "triumph of the bureaucracy," as a deterioration of the internal system could be described.

A deteriorating external environment could come about in several ways, although judging from the way that the PRC has weathered the recent round of crisis, external problems would likely be triggered from within. China's continued growth may strain the world market system to a point where some event will trigger deterioration. This could be in the form of a perceived predatory move on the part of the PRC (like devaluation of currency or increased tariffs). Problems could even arise if the trade surplus between China and the US continues to be an issue.

International problems may effect the levels of trade between the PRC and the rest of the world. China must keep trade growing in order to avoid problems from an ever-increasing population. Market reforms would stop at their present levels and the

satisfaction level of the populace would fall. Just as strong positive factors would push the situation up and right on the matrix, problems would pull the Chinese economy down and to the left. However, it is unlikely that the situation would drop into the level of box 7. As the OECD writes: "Barring an outright collapse of the political system, however, growth in the economy will not come to a halt. During the two decades that contained the disastrous economic policies of the Great Leap Forward and the Cultural Revolution (1957-78), China still managed an average GNP growth rate of 4.5 percent per year."⁷⁴

Even if the external environment remains open, the inefficiencies of the PRC bureaucracy could consume any potential for growth. The current government system is clearly reluctant to relinquish the power that it now holds. This situation could be characterized by the PRC following the example of the other Asian tigers and letting SOEs develop into Chaebol type conglomerates, following the other inefficient Asian economies into financial recession. Corruption would become a burden and increase inefficiencies.

3. SCENARIO 3. Low-level Growth (4 percent).

This is the worst of the worst cases and highly unlikely. The result of a major international crisis or bout of worldwide recession may cause both interior and exterior factors to deteriorate and the PRC system would revert back to a point of high unemployment among an exploding population, the infrastructure would crumble. Monetary problems would be exacerbated by hyperinflation and the current system would collapse to a barter type economy with virtually nowhere for reforms to start. At

⁷⁴ Ibid., 33.

this point, the PRC would resemble the present state of the economy in Russia although the two countries would have taken different roads from a Leninist economy, to a market economy, to collapse. A table diagram for the sequence of events in the low growth scenario is presented as Table 6.

Table 5. High Growth Scenario

Initial Conditions (1998)	Epoch 1. (2005)	Epoch 2. (2010)
Scholars educated overseas	Scholars educated overseas return	International marketplace absorbs PRC
Low investment in research and technology, stagnant workforce education level	Savings rates rise	Domestic consumer market grows, inventories diminish
High savings rates	PRC integrates into world market	Corruption decreases (includes PLA)
Banks need reform	Bank reforms	Exports increase
Rural to urban migration restricted	SOEs reformed, efficient enterprises, lower unemployment	Efficient investment in infrastructure, food and energy distribution
Small public service sector	Bad debt decreases	Industrial/manufacturing modernizes and transitions to high value added products
Economic crisis in Asia	Public service sector expands	FDI increases causing high-end manufacturing to expand
	Political stability	Aging Population does not burden society
	Asian economic crisis does not spread to PRC	

Table 6. Low Growth Scenario

Initial Conditions (1998)	Epoch 1. (2005)	Epoch 2. (2010)
Scholars educated overseas	Scholars educated overseas do not return	International marketplace becomes hostile
Low investment in research and technology, stagnant workforce education level	Savings rates drop	Domestic consumer market shrinks, inventories build
High savings rates	PRC cannot integrate into world market	Corruption increases (includes PLA)
Banks need reform	Bank reforms never happen	Exports decrease
Rural to urban migration restricted	SOEs not reformed, inefficiencies absorb capital, unemployment rises	No investment in infrastructure, food and energy distribution fails
Small public service sector	Bad debt accumulates	Industrial/manufacturing does not modernize stays with low value added products
Economic crisis in Asia	Public service sector never expands	FDI decreases high-end manufacturing never expands
	Political instability	Aging Population burdens society
	Asian economic crisis spreads globally	PRC devaluation triggers more regional devaluation

VII. PRC POLICY, US POLICY AND THE WORLD

Sino-US relations currently focus on economic policy as an avenue to shape political policy. This chapter addresses three areas where further research is needed to fully determine the correct policy that the US should assume. These areas are:

1. Is it possible to affect PRC policy toward a direction that aligns with US interests?
2. Is the PRC system moving in a direction of democratization?
3. Can US policy affect a PRC move toward democratization?

Each of these questions is an analysis of a complicated relationship between the US and a complicated PRC system.

The focus of this thesis is the PRC economy and the possibility of sustaining the growth recognized as a result of the post 1978 reforms. A short survey of PRC and US foreign policies is important in order to identify areas that require future research. An analysis of foreign relations between the PRC and the US illuminates a situation that is just as complicated and difficult to understand as the PRC system itself. The PRC and US are locked into a relationship that is a mix of conflict and interdependence. Each country needs the other in order to continue to increase its standards of living. Potential policy options for each nation span the range of orientations from friendly to hostile. The optimists in each country see the other as a necessary ally in the movement toward a true world economy while the more pessimistic and militaristic see the other country as a threat from a regional and global standpoint.

A. POLICY OPTIONS

Relations between the PRC and the US seem to have a cyclical nature, oscillating between hostility and cooperation. In times of strained relations perceived Chinese misbehaviors such as human rights violations, military technology and arms proliferation and unfair trade practices are met with US actions such as removal of most favored nation status (MFN) and strong talk of containment.

The US policy possibilities toward the PRC cover the continuum from passive to aggressive approaches. David Shambaugh outlines three possible directions for US/PRC relations: engagement, confrontation and destabilization.⁷⁵ Denny Roy describes three potential orientations as appeasement, enmeshment and containment.⁷⁶ A combination of these two lists produces a list that separates the spectrum into four categories, appeasement, enmeshment/engagement, confrontation/containment, and destabilization. Each stance is promoted by politicians and special interest groups who cast their political, economic or military bets with the idea that US policy will shape a particular future for the PRC. These orientations do have one thing in common; all involve some level of US interaction in shaping a changing PRC. This is important because no matter what viewpoint one assumes concerning Sino-US relations, there is no debate concerning the fact that China is at a very important and dynamic point in its history. Each viewpoint does differ in the direction they believe these changes will steer relations between these two countries.

⁷⁵ David Shambaugh, "The United States and China: A New Cold War?", *Current History*, Vol. 94, No. 593, September 1995, 243.

⁷⁶ Denny Roy, "The 'China Threat' Issue, Major Arguments", *Asian Survey*, August 1996, 765.

On the most radical side of the spectrum is appeasement. The idea behind this position is that the PRC is growing, and it is going to become a regional and world giant. Any efforts to influence the PRC system will only anger its policy makers and will have no positive results. This outlook is more pessimistic than engagement or enmeshment concerning the ability of outside forces to shape the PRC system. Appeasement advocates believe that the PRC system will better develop in a direction aligning with US interests without the added aggravation of US influence.

Analysts that view the PRC system with the most suspicion are advocates of a confrontational or containment type relationship. This group perceives Chinese business and political leaders as hostile to the US. They fear that as an economic giant, the PRC would treat the world in the same authoritarian style that they treat Chinese citizens. Therefore, the proper way to interact with such a country would be a strong policy of containment in all issues important to American interests.

On the side of the policy spectrum that believes in high levels of intervention are the advocates of destabilization who identify Chinese Communists specifically as the threat to the US, and believe a policy to foster political change would align post Communist China with American interests. This orientation has the smallest number of proponents of the four, but bears mentioning for the purposes of identifying the entire range of options.

B. CURRENT US POLICY RELATIONS WITH THE PRC

The Clinton administration adopted a policy of engagement mid way through its first term. In a 1995 article, Shambaugh asserted that US policy was taking the direction

of "comprehensive engagement." This, he stated, was separating all issues concerning US/PRC relations and dealing with them individually. At that time, Shambaugh considered total PRC collapse a possibility. Therefore, this policy would not be viewed by the PRC as too containing. An impression of containment, Shambaugh asserted, would reduce US leverage in the case of a PRC fragmentation, contributing to a total collapse with devastating consequences to regional stability and world economic markets.⁷⁷ Marcus Noland identified difficulties concerning PRC perceptions of US inconsistencies that he attributed to the nature of the US political system.

US policy toward China is probably best regarded as a manifestation of competing interests in which no single goal predominates and special interest groups may hold sway on particular issues. This sometimes gives the impression of an inconsistent policy, but to a certain extent this is probably inherent in the structure of the US political system and the lack of domestic consensus over goals, strategies and tactics in the post-Cold War world.⁷⁸

Currently, most US policy makers favor an "active engagement" strategy for Sino-US relations into the 21st century.⁷⁹ At this point, it makes sense to have a policy that tries to work with the PRC to help that system develop in a manner consistent with US interests. In a June 1998 interview, President Clinton recognized that it was in the best interests of the US to foster a PRC system that "embraces political pluralism" and integrates smoothly into the world market. The President expressed fear that a containment policy would force the PRC to look inward to its domestic market in order to

⁷⁷ David Shambaugh, "The United States and China: A New Cold War?" 243.

⁷⁸ Marcus Noland, "China and the International Economic System"

⁷⁹ *China's Economic Future, Challenges to U.S. Policy*, Joint Economic Committee, Congress of the United States, ed. (Armonk, M.E. Sharpe: 1997), xvi.

sustain strong economic growth. This would be counterproductive to US economic and foreign policy interests.⁸⁰ If, in the future, there are indications that the PRC system is evolving in a direction hostile to US interests, it would still be possible to harden US policy. It currently appears likely that the PRC will develop in a direction more friendly to the US than belligerent. Chinese President Jiang Zemin expressed feelings that Sino-US relations were progressing well: "During my visit to the United States last year, President Clinton and I decided that China and the United States should work together toward a constructive strategic partnership. Since then, China-US relations have constantly improved."⁸¹ Furthermore, whether it is even possible to affect PRC policy in a direction that aligns with US interests needs further study.

Two methods in which US policy can affect the PRC system are bilaterally and multilaterally. An example of a bilateral method of influencing the PRC is through the granting of most favored nation status (MFN). This issue has come to symbolize the debate concerning PRC-US relations. Originally given to every country with which the US conducted trade, the failure to grant MFN status became an issue in the early Cold War era when the US was attempting to inhibit the spread of Communism. The term "most favored" does not mean that a country is all that special, as there are only six countries that do not enjoy MFN status.

The arguments against granting China MFN status appear to be an attack on the President as much as the policy. From a purely legal standpoint, enforcement of the Jackson-Vanik trade act of 1974 requires the President to get a waiver of MFN status if a

⁸⁰ Bill Clinton, "Why I'm Going to Beijing," *Newsweek*, 29 June 1998, 28.

⁸¹ Jiang Zemin, interviewed by Lally Weymouth, *Newsweek*, 29 June 1998, 26.

country limits immigration. The President must get MFN approval from a partisan legislative branch, the issue becomes a battle of politics, and the actual issue of the PRC economy becomes secondary. Clinton opponents cite campaign finance issues and technology transfer as inappropriate ties with the country and wish to use the act of 1974 to limit the President's agenda. Big labor (ironically a strong traditional Democratic supporter) notes the loss of US jobs caused by the large trade deficit with the PRC. Human rights and environmental groups identify China's abuses in both areas as reasons not to have any relations, either political or economic. The most valid issues are actually China's protectionist nature and non-reciprocation of comparatively low US tariff levels.

To justify MFN approval the Administration highlights PRC moves that demonstrate a softening of the régime's policies. These include:

1. China's condemnation of the recent nuclear testing by Pakistan and India.
2. The PRC's assumption of a leadership role concerning proliferation issues in the South Asia region (China hosting a P-5 meeting to discuss regional security issues exemplifies this).
3. China's reaction to the Asian financial crisis (stable currency values) in bolstering regional economic stability.
4. The constructive PRC role in Korean peace talks.
5. Renewed contact with Taiwan.⁸²

While MFN status is a bilateral issue strictly between the US and the PRC, the US does have avenues to affect the way in which the PRC integrates into global economic institutions (multilaterally). An example of this is the World Trade Organization (WTO). The WTO is comprised of the major trading nations separated into developed countries and developing countries. To be a member of the WTO a country must meet the basic

⁸² United States Information Service, Washington File, White House Fact Sheet on China MFN Renewal, June 03, 1998.

requirements of membership: "transparency of the trade regime; uniform, non-discriminatory application of trade rules; and national treatment for goods and, to a more limited extent, service providers."⁸³ China has yet to be allowed membership because of lack of transparency in trade restrictions and differing policies in different regions of the country. Marcus Noland identifies odd discrepancies in PRC attitudes toward international criticism: "Ironically, the US insistence on market access (which is, after all, trade expanding and welfare-enhancing) has been criticized in China, while the EU's demands for safeguards (which restrict trade and reduce welfare) has received less opprobrium."⁸⁴ Another point of contention is what designation the PRC would receive if it were to join the WTO. Naturally, PRC technocrats wish to enter the organization as a developing nation, the designation that bestows the most concessions.

On the down side of using the WTO in order to gain leverage in shaping the PRC economy, the US runs the risk of alienating the Chinese. These efforts could be perceived as overly containing and serve to anger PRC policymakers, pushing them into a more predatory position. Recent trends in PRC policy show a shift to a more inward orientated stance; it is even proposed that the PRC no longer desires to be a member of the WTO.⁸⁵

C. PRC VIEWS OF THE US

Just as the US has policy makers who tend to be either pro-PRC or anti-PRC, the PRC has policy makers who are either soft on Sino-US relations or take the hard line.

⁸³ Marcus Noland, "China and the International Economic System," 8.

⁸⁴ Ibid., 8.

⁸⁵ Steven Haggard, Institute of Global Conflict and Cooperation, University of California at San Diego in Asian Security Conference, Naval Postgraduate School, Monterey, California, November 5, 1998.

The soft line leaders in the PRC believe that, for the near term, the US is a dominant power, so the preferred strategy in working with the US is to allow minor concessions in order to ensure positive relations. On the other side are the hard liners who believe that the PRC is assuming a much too submissive position in relations between the two countries, and that PRC policy should shift to a more confrontational stance. Proponents of the hard line have been strengthened by a recent rise in anti-US sentiment in the PRC.⁸⁶

An issue that clouds analysis concerning PRC policy is identifying the source of that policy. In the years since Deng's reforms a shift of de-facto power has occurred away from CCP leaders and toward business technocrats. Greg Austin writes: "The manifest inability of the Communist Party to overcome its chronic factionalism and the severe and widespread challenge to its authority at the grass-roots level will probably deny the Party the levers of power that could quickly reverse current trends."⁸⁷ It appears that the CCP is changing. This could be a change for the better in terms of alignment with US interests. The newer party leaders are younger, more educated, and tend to appreciate economic concerns more than traditional party ideals.⁸⁸ Is this a move toward more democratization on the part of the PRC, or is it possible to have "a market economy with Chinese characteristics" that mixes communism with capitalism? This raises

⁸⁶ Ideas presented in NS 3661 course at Naval Postgraduate School, September 1, 1998, Professor Denny Roy.

⁸⁷ Greg Austin, "The Strategic Implications of China's Public Order Crisis" *Survival*, Vol. 37, No. 2, Summer 1995, 13.

⁸⁸ Ibid.

another area that needs further study: is the PRC system moving in a direction of democratization and can US policy affect that move?

It appears that the PRC desires to be an influential economic superpower in the region. Recent actions that indicate the PRC is making an effort to fit into the world economy include the rather benign method with which the PRC reacquired control over Hong Kong in 1997 and the contributions to the IMF that helped finance the bailout of Thailand. An additional indication of the direction in which PRC policy is evolving will come as talks progress concerning the PRC/Taiwan issue. Taiwan offers substantial economic benefits to the PRC in the case of a friendly accord. Hostile military actions by the PRC on the island of Taiwan could destroy valuable infrastructure. Curbing Taiwan independence is, however a very important piece of PRC policy and the choice between letting Taiwan have independence and protecting economic potential will reveal much concerning the direction in which the PRC is going at this critical time.

An issue that has not yet become contentious is the growing trade imbalance between the US and the PRC. Considering the diminished export opportunities that have resulted from the Asian economic crises, the PRC needs to increase imports to the US in order to maintain growth. Another impact of the crisis could be a reduction of prices of Asian goods imported into the US in the coming year. This would increase demand in the US while making US exports to the PRC more expensive and increase the current account deficit even more.

Another area of question concerning China's intentions of becoming a great power is what kind of a power the PRC would be. As mentioned above, it appears that

the PRC desires a role in the economic world. What about international security? The PRC has long articulated a noticeably defensive stance concerning its numerically strong army and weapons that include intercontinental ballistic missiles (ICBMs), modern diesel submarines, and Russian built fighter aircraft. The PRC certainly possesses the military assets of a world power, but the capability to utilize and maintain those weapons is questionable. A National Security Planning Associates study concluded that the PRC's main interests were listed in the Summer of 1997 congress as: "continued economic growth, curbing Taiwan independence, and preserving domestic stability."⁸⁹ This gives a strong indication that the PRC will be in the position to focus on internal issues for the next several decades. The same report summarized: "Indeed, there is now ample reason to believe that the second quarter of the twenty-first century will see China more as an economic giant than as the only remaining major communist dictatorship in the world."⁹⁰

The sound macroeconomic policies demonstrated by PRC leadership for the past twenty years make a total economic collapse highly unlikely, and therefore the PRC should realize some level of growth through the first quarter of the 21st century. This should prove true, even if the Asian economic crisis were to worsen. Economic growth seems to be the only consistent thing in the PRC in the last twenty years. As the PRC economy grows it is destined to become the largest economy in the world. The question of how to deal with such an economic giant is much less certain. To help define a policy

⁸⁹ Asia-Pacific, Issues & Developments by National Security Planning Associates, a subsidiary of the Institute for Foreign Policy Analysis, Cambridge, MA, October, 31, 1997, 58.

⁹⁰ Ibid., 58.

toward the PRC one must assess what kind of economic giant the PRC will become in the next century.

VIII. CONCLUSION

The purpose of this thesis is to study the Chinese economy and analyze the economic growth that the country has experienced since Deng Xiaoping instituted reforms in 1978. The goal is to provide an answer to the question: is the economic growth of the current PRC system sustainable? Critical factors that contributed to that economic growth, along with recent trends and developments, hold valuable information concerning the potential for continued growth. A survey of existing literature concentrated on the factors that have the potential for continued contributions to economic growth. The goal of the review was to make some sense of the great quantities of literature that have proliferated of late. To this base, economic forecasting was added to provide insight concerning specifics for future scenarios. Forecasts from prominent China watchers were studied and an autoregressive-distributed lag model and run for this thesis to determine the long run relationship between investment and growth of GNP.

China's unique history encompasses hundreds of years of rising and declining dynasties leaving a proud Sino-centric legacy that combined with a Century of Shame, resulting in a dissatisfied power that was ripe for a charismatic leader. Mao Zedong filled the role of the leader destined to take the PRC out of the Century of Shame. Mao developed a Marxist-Leninist ideology and used it to construct a communist system that partially mirrored the Soviet Union of the Cold War era. To the benefit of the Chinese, the PRC was more agrarian than the Soviet Union resulting in a surplus of labor that was a form of potential energy ready to contribute to economic growth.

When Deng took over, the PRC was in sound macroeconomic shape. He instituted land reform and increased exposure to foreign trade and investment. Deng desired to move away from the traditional PRC extensive growth model and improve productivity. He recognized the benefits of standard of living increases that neighboring countries, the Asian Tigers, were realizing and he desired the same for the PRC. This was a big change for the Communist economic system of the PRC.

The PRC economic reform period consisted of three phases of reforms, each instituted as the PRC economy began to overheat and inflation increase. Each new phase of reforms accomplished its goal of reducing inflation and sustaining high growth. An area in which reforms were attempted but not successful was the SOEs. SOEs remain a major source of waste and inefficiencies to this day. They do, however, provide employment for millions of workers, and this makes reforms that eliminate or restructure SOEs controversial and difficult to institute because of the resulting rises in the number of unemployed. The reforms that were instituted established a healthy non-state sector and profitable TVEs that occupy a niche in the middle ground between the State and non-state sectors. Deng's reforms have been criticized by some as haphazard and characterized by the Chinese term *moshitouguohe* or crossing the river by groping for stones along the way. It is hard to be too critical of Deng's reforms because the PRC has realized growth levels of nine percent per year since 1978.

A sizeable amount of literature has been published concerning the PRC in the period after the initiation of reforms; predictions concerning future growth have been widely varied. Zuli Hu and Mohsin Kahn published a working paper for the IMF

reporting that a significant portion of PRC reforms came from increased productivity as underemployed agriculture workers moved to more industrial jobs and the PRC emerged in the world marketplace. Jeffrey Sachs and Wing Thye Woo, working for the National Bureau of Economic Research, attribute the PRC's growth solely to its exposure to foreign trade and a "harmonization" with its capitalist neighbors. These two theories are not necessarily mutually exclusive because they both attribute growth to a reallocation of the workforce and opening of trade, although they differ concerning the SOE sector. Hu and Khan recognized productivity gains in many sectors of the PRC economy, including the SOEs. Sachs and Woo believe that the SOE sector is a major source of drag and no productivity gains were realized in that area.⁹¹

The Rand Company sponsored a study of economic and military trends in 1989 that forecasted future economic growth for several countries including the PRC. The 1989 study predicted 4.7 percent growth for the period 1990-2000. Rand again sponsored an economic and military trend study by several of the same authors using the same method. This time the forecast developed two scenarios, one with stable growth predicting 4.9 percent growth (1994-2015), and a second disrupted growth scenario that forecast 3 percent growth over the same period. The authors conceded that their estimates were probably low.

An autoregressive-distributed lag method with an error correction model was used to forecast GNP growth using its long run correlation with investment. Three scenarios were constructed using high, medium and low growth patterns. The high and low

⁹¹ Sachs and Woo, "Understanding China's Economic Performance."

scenarios fit within the boundaries of established investment as a percentage of GNP in PRC history.

The future of PRC growth depends on a combination of internal and external factors and developments. Internal factors include human capital, SOEs, industrial and manufacturing, agriculture, infrastructure development, financial and service sector development, and political stability. External developments include PRC integration into the world economy and the Asian economic crisis. In order for the PRC to experience the high growth scenario, these items and developments must remain stable and positive. Major difficulties with any of the listed issues and the PRC will experience low growth. The likely scenario is somewhere in between.

Sino-US relations seem to be at the high end of a cyclical pattern. Economic policy is often used as a tool to develop foreign policy in areas such as weapons proliferation and human rights. President Clinton's administration is pursuing a policy of engagement that is designed to work with PRC leaders fostering a move away from traditional Communism and toward a free market economy and, hopefully, democracy.

This assessment of the PRC economy shows a system that has progressed through several stages and has demonstrated sound macroeconomic policies. This has continued despite the Asian economic crisis and the resulting decrease in market demand. The growth is from increases in productivity and has taken advantage of underemployed workers and opening of trade. The PRC faces substantial problems both from within its borders and outside. The country has a history of major problems and disruptions yet it

still realizes economic growth. The conclusion of this thesis is that the economic growth that the PRC has demonstrated is sustainable.

APPENDIX: FORECAST DATA

Table 7 is the tabulated results of the ARDL forecast. Table 8 is the data file used in the ARDL exercise.

Table 7. ARDL Forecast for PRC GNP

Results in 1987 Yuan (trillions)			
Year	Low Estimate	Medium Estimate	High Estimate
1996	2.82	2.86	2.90
1997	3.05	3.15	3.26
1998	3.28	3.47	3.66
1999	3.51	3.77	4.07
2000	3.74	4.11	4.53
2001	3.96	4.47	5.06
2002	4.19	4.86	5.65
2003	4.42	5.26	6.28
2004	4.65	5.69	6.98
2005	4.89	6.14	7.76
2006	5.13	6.64	8.64
2007	5.38	7.16	9.60
2008	5.63	7.72	10.70
2009	5.88	8.32	11.80
2010	6.15	8.97	13.20

Table 8 data from 1970 to 1995 entered from World Bank World Tables (1997 CDROM edition). Data from 1996 to 2010 derived using 11 percent increase for GDI, 4 percent increase for GDI1, and 7.55 percent increase for GDI2. Intpt is the intercept point for the ARDL model.

Table 8. Input-data for ARDL Model

GNP and GDI data in 1987 Yuan (trillion)					
Year	GNP	GDI	GDI1	GDI2	INT
1970	3.753	0.987	0.987	0.987	1
1971	3.753	1.089	1.089	1.089	1
1972	3.753	1.054	1.054	1.054	1
1973	4.065	1.230	1.230	1.230	1
1974	4.108	1.251	1.251	1.251	1
1975	4.448	1.406	1.406	1.406	1
1976	4.207	1.281	1.281	1.281	1
1977	4.539	1.435	1.435	1.435	1
1978	5.169	1.977	1.977	1.977	1
1979	5.566	2.042	2.042	2.042	1
1980	6.047	2.122	2.122	2.122	1
1981	6.297	2.049	2.049	2.049	1
1982	6.806	2.273	2.273	2.273	1
1983	7.503	2.546	2.546	2.546	1
1984	8.645	2.988	2.988	2.988	1
1985	9.833	3.721	3.721	3.721	1
1986	10.700	4.041	4.041	4.041	1
1987	11.950	4.322	4.322	4.322	1
1988	13.330	4.901	4.901	4.901	1
1989	13.880	4.996	4.996	4.996	1
1990	14.420	4.998	4.998	4.998	1
1991	15.780	5.463	5.463	5.463	1
1992	18.080	6.131	6.131	6.131	1
1993	20.570	7.649	7.649	7.649	1
1994	23.240	8.455	8.455	8.455	1
1995	25.620	10.070	10.070	10.070	1
1996		11.180	10.470	10.830	1
1997		12.410	10.890	11.640	1
1998		13.770	11.330	12.510	1
1999		15.290	11.780	13.450	1
2000		16.970	12.250	14.460	1
2001		18.840	12.740	15.540	1
2002		20.910	13.250	16.710	1
2003		23.210	13.780	17.960	1
2004		25.760	14.340	19.310	1
2005		28.600	14.910	20.760	1
2006		31.740	15.500	22.310	1
2007		35.230	16.120	23.990	1
2008		39.110	16.770	25.790	1
2009		43.410	17.440	27.720	1
2010		48.190	18.140	29.800	1

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